3. Alignment and Adjustments

3-1 VCR Adjustment

3-1-1 Reference

1) X-Point (Tracking center) adjustment, “Head switching adjustment” and “NVRAM option setting” can be adjusted with remote control.
2) When replacing the Main PCB Micom (IC601) and NVRAM (IC603 ; EEPROM) be sure to adjust the “Head switching adjustment” and “NVRAM option setting”.
3) When replacing the cylinder ass’y, be sure to adjust the “X-Point” and “Head switching adjustment”.
4) How to adjust.
   - Intermittently short-circuit the Test Point on Main PCB with pincers to the adjustment mode.
   - If the corresponding adjustment button is pressed, the adjustment is performed automatically.
   - When the adjustment is completed, be sure to turn the power off.

3-1-1(a) Location of adjustment button of remote control

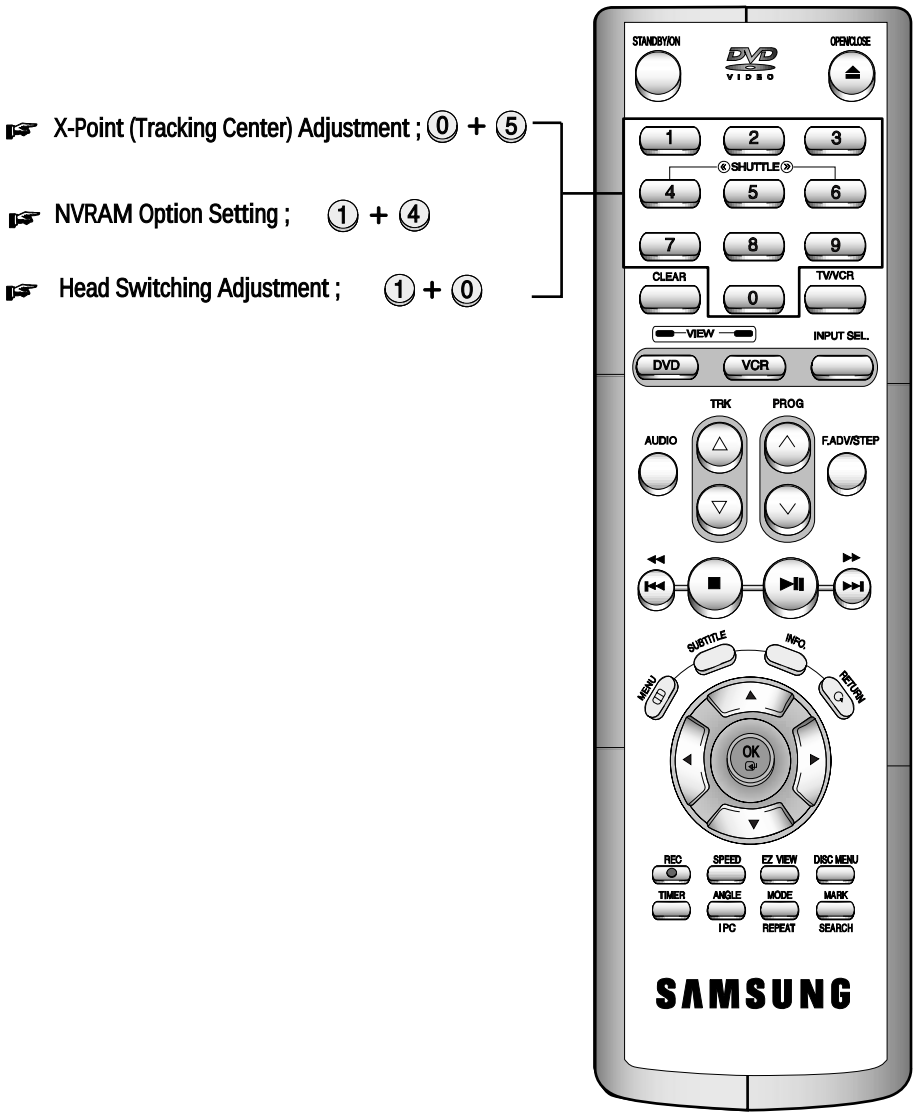


Fig. 3-1

3-1-1(b) TEST location for adjustment mode setting

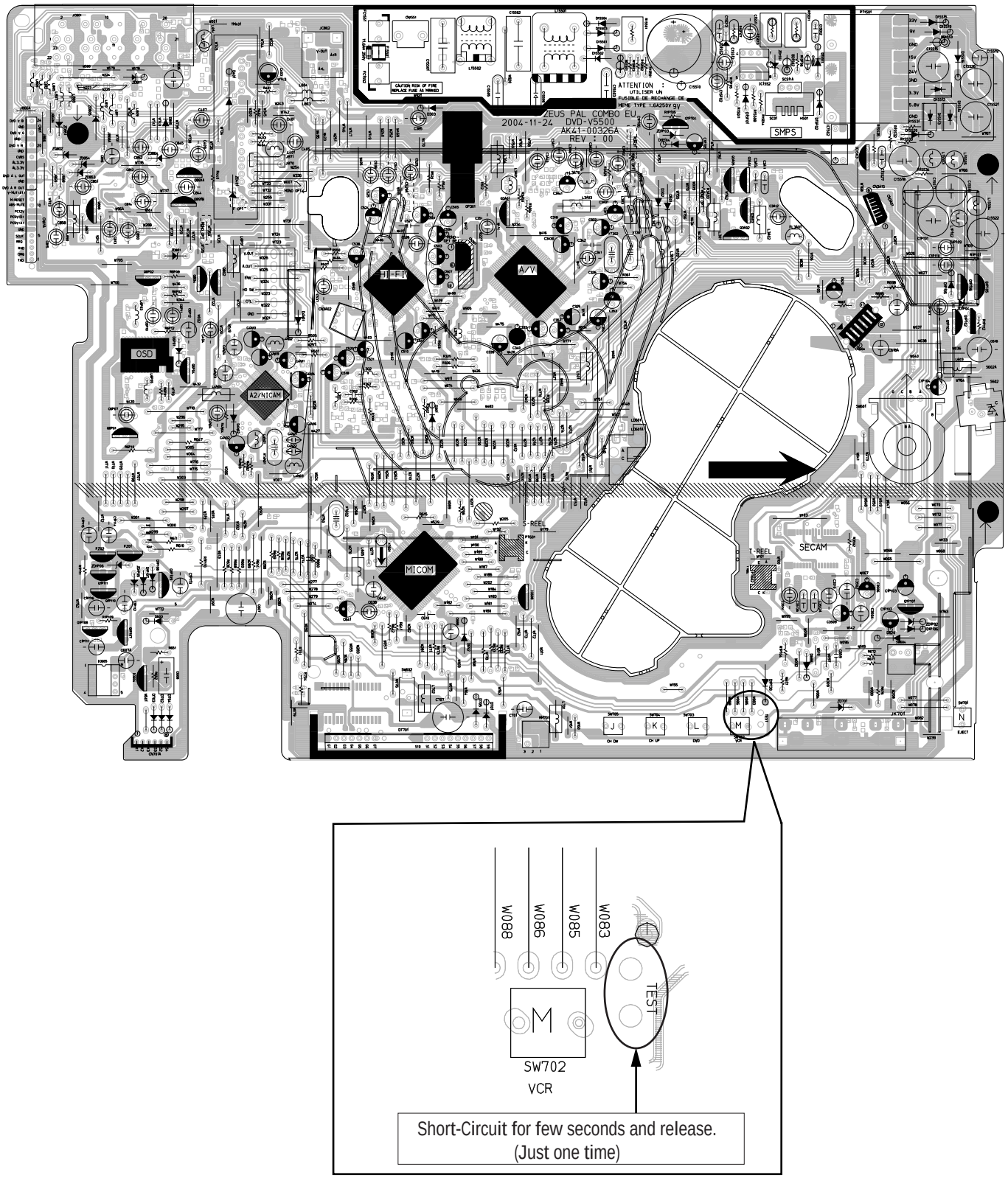


Fig. 3-2 VCR Main PCB (Top View)

3-1-2 Head Switching Point Adjustment

1) Playback the alignment tape.
2) Intermittently short-circuit the two Test Points on VCR Main PCB while setting the adjustment mode. (See Fig. 3-2)
3) Press the “1, 0” buttons; remote control adjustment operates automatically. (See Fig. 3-1)

3-1-3 NVRAM Option Setting

1) NVRAM Option is adjusted in the factory.
2) In case Main PCB Micom (IC601) and NVRAM (IC603 ; EEPROM) are replaced, be sure to set the corresponding option number of the required model. (If the option is not set, the unit will not operate.)

1) Intermittently short-circuit the two Test Points on VCR Main PCB. (See Fig. 3-2)
2) Press the “1, 4” button on the remote control. The option setting appears. (See Fig. 3-3)
3) Select the option number (See table 3-1) of corresponding model with “◀, ▶, ▲, ▼” buttons on the remote control.
4) After selecting the option number is completed, press the “▲” button of remote control. (If “▲” button is pressed, the selected number is changescolor. ; See Fig. 3-4)
5) Press the “ENTER” button of remote control again to store the option number.
6) Turn the Power off.

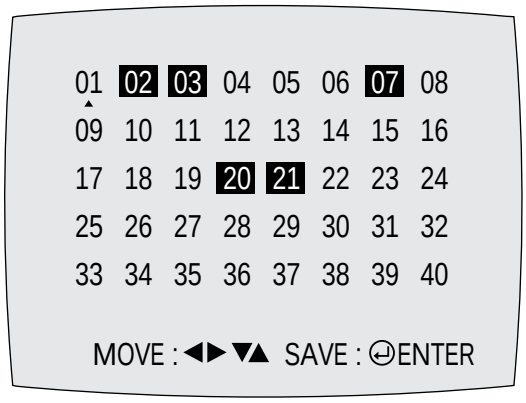


Fig.3-3

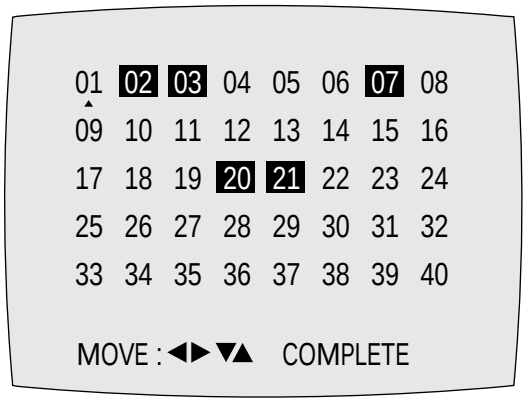


Fig.3-4

<Table 3-1 NVRAM Option Table>

MODEL	OPTION NUMBERS
DVD-V5500/XEF	4, 5, 6, 7, 8, 9, 10, 12, 15, 18, 20, 21, 26, 33, 34, 35, 36, 38, 40, 47, 48, 49, 50, 51, 58, 61, 63, 65, 69, 72
DVD-V5500/XEB	4, 5, 6, 7, 8, 9, 10, 12, 15, 18, 20, 21, 26, 33, 34, 35, 36, 38, 40, 42, 47, 48, 49, 50, 51, 58, 61, 63, 65, 69, 72
DVD-V5500/XEU	4, 5, 6, 7, 8, 9, 10, 12, 15, 18, 25, 26, 34, 38, 40, 41, 47, 48, 49, 50, 51, 58, 61, 63, 65, 69, 72
DVD-V5500/XEN	4, 5, 6, 7, 8, 9, 10, 12, 15, 18, 34, 36, 38, 40, 42, 47, 48, 49, 50, 51, 58, 61, 63, 65, 69, 72
DVD-V5500/XEC	4, 5, 6, 7, 8, 9, 10, 12, 15, 18, 34, 36, 38, 40, 42, 47, 48, 49, 50, 51, 58, 61, 63, 65, 69, 72
DVD-V5500/XEE	4, 5, 6, 7, 8, 9, 10, 12, 15, 18, 34, 36, 38, 40, 42, 47, 48, 49, 50, 51, 58, 61, 63, 65, 69, 72
DVD-V5500/XEG	4, 5, 6, 7, 9, 10, 12, 15, 17, 18, 34, 36, 38, 40, 42, 47, 48, 49, 50, 51, 58, 61, 63, 65, 69, 72
DVD-V5500/COM	4, 5, 6, 7, 9, 10, 12, 15, 17, 18, 34, 36, 38, 40, 42, 47, 48, 49, 50, 51, 58, 61, 63, 65, 69, 72
DVD-V5500/XET	4, 5, 6, 7, 9, 10, 12, 15, 17, 18, 34, 36, 38, 40, 42, 47, 48, 49, 50, 51, 58, 61, 63, 65, 69, 72
DVD-V5500/EUR	4, 6, 7, 8, 9, 10, 12, 15, 17, 18, 20, 33, 34, 36, 38, 42, 47, 48, 49, 50, 51, 58, 61, 63, 65, 69, 72
DVD-V5500/XEO	4, 6, 7, 8, 9, 10, 12, 15, 17, 18, 20, 33, 34, 36, 38, 42, 47, 48, 49, 50, 51, 58, 61, 63, 65, 69, 72
DVD-V6000/XEU	4, 5, 6, 7, 8, 9, 10, 12, 15, 18, 25, 26, 34, 38, 40, 41, 47, 48, 49, 50, 51, 58, 61, 63, 65, 69, 72
DVD-V6500/XEF	2, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 15, 16, 17, 18, 20, 21, 26, 33, 34, 35, 36, 38, 40, 44, 47, 48, 49, 50, 51, 58, 61, 63, 65, 69, 72
DVD-V6500/XEB	2, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 15, 16, 17, 18, 20, 21, 21, 26, 33, 34, 35, 36, 38, 40, 42, 44, 47, 48, 49, 50, 51, 58, 61, 63, 65, 69, 72
DVD-V6500/XEU	3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 15, 17, 18, 25, 26, 34, 38, 40, 41, 44, 47, 48, 49, 50, 51, 58, 61, 63, 65, 69, 72
DVD-V6500/XEN	2, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 15, 16, 17, 18, 34, 36, 38, 40, 42, 44, 47, 48, 49, 50, 51, 58, 61,63, 65, 69, 72
DVD-V6500/XEC	2, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 15, 16, 17, 18, 34, 36, 38, 40, 42, 44, 47, 48, 49, 50, 51, 58, 61,63, 65, 69, 72
DVD-V6500/XEE	2, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 15, 16, 17, 18, 34, 36, 38, 40, 42, 44, 47, 48, 49, 50, 51, 58, 61,63, 65, 69, 72
DVD-V6500/XEG	2, 4, 5, 6, 7, 9, 10, 11, 12, 13, 15, 16, 17, 18, 34, 36, 38. 40, 42, 44, 47, 48, 49, 50, 51, 58, 61, 63, 65, 69, 72
DVD-V6500/COM	2, 4, 5, 6, 7, 9, 10, 11, 12, 13, 15, 16, 17, 18, 34, 36, 38. 40, 42, 44, 47, 48, 49, 50, 51, 58, 61, 63, 65, 69, 72
DVD-V6500/XET	2, 4, 5, 6, 7, 9, 10, 11, 12, 13, 15, 16, 17, 18, 34, 36, 38. 40, 42, 44, 47, 48, 49, 50, 51, 58, 61, 63, 65, 69, 72
DVD-V6500/EUR	2, 4, 6, 7, 8, 9, 10, 11, 12, 13, 15, 16, 17, 18, 20, 33, 34, 36, 38, 42, 44, 47, 48, 49, 50, 51, 58, 61, 63, 65, 69, 72
DVD-V6500/XEO	2, 4, 6, 7, 8, 9, 10, 11, 12, 13, 15, 16, 17, 18, 20, 33, 34, 36, 38, 42, 44, 47, 48, 49, 50, 51, 58, 61, 63, 65, 69, 72

3-2 DVD Adjustment

3-2-1 Location of Test Point

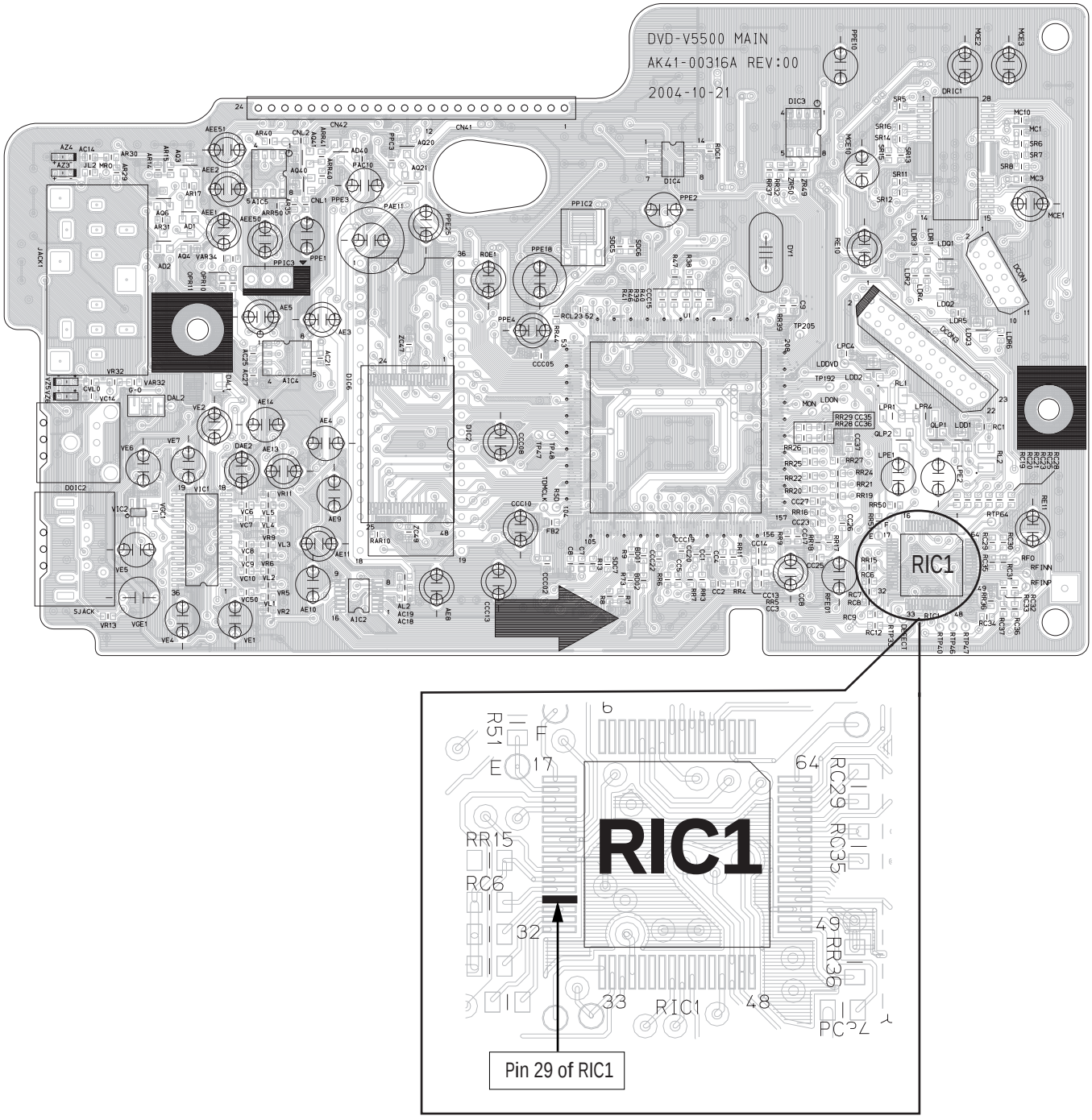


Fig. 3-5 Location of test Point (Main PCB - Top Side)

3-2-2 Skew Adjustment

3-2-2(a) Adjustment Spec. and Test Point

<Table 3-2>

◆ Test Disc ; Service not Available

Test Disc	Adjustment Spec.	Test Point	Adjustment Location
TDV-533 Chapter 14	Flat Waveform	"Pin 29 of RIC1" (DVD Main PCB - Top Side) (See Fig. 3-5)	Ass'y Deck - Top Side (See Fig. 3-6)

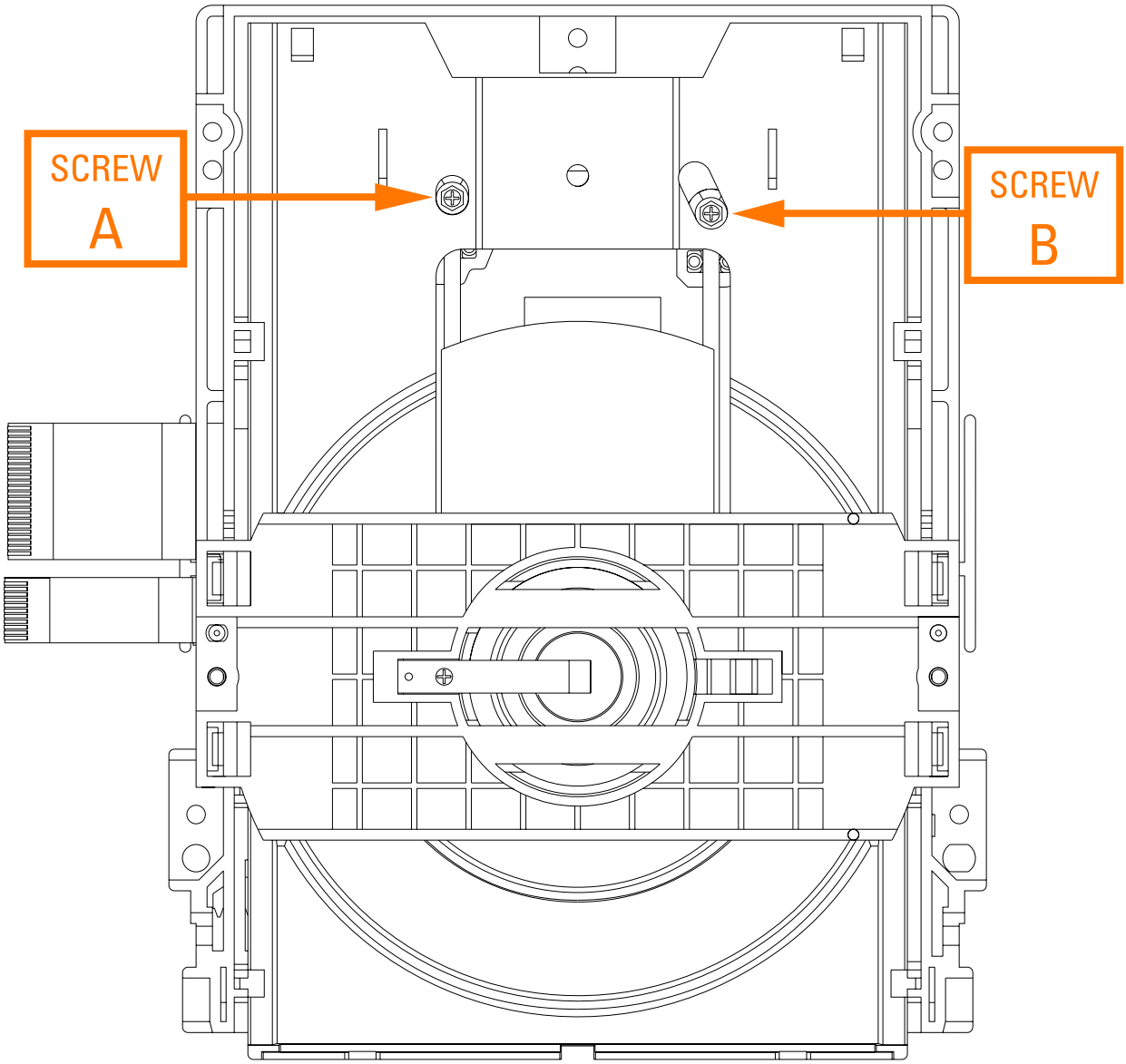


Fig.3-6 Ass'y Deck (Top Side)

3-2-2(b) SKEW Adjustment Method

Needed to minimize the variations in Skew of the Pickup unit and to provide optimum match with the recorded signal on the Disc.

1) Connect an Oscilloscope to the “Pin 29 of RIC1” Test Point (See Fig. 3-5).
2) Connect Power, Open the Tray and Play Ch.14 Which is in the TDV-533 Disc.
   ◆ Set the Oscilloscope Range as follows :
   (Voltage ; 50mV / Div., Frequency ; 10m Sec.)
3) Adjust the Screws “A” and “B” (See Fig. 3-6) using a Hex screwdriver until you obtain a Flat Waveform and the picture is stable.
   Then, go to Chapter 1 and make sure the Waveform is Flat here as well.
   If not, you have to go back to Chapter 14 and adjust again.
   If you cannot obtain a Flat waveform, then the unit is defective.

Note : The Deck must be in a horizontal position. Use both “A” and “B” screws to adjust.

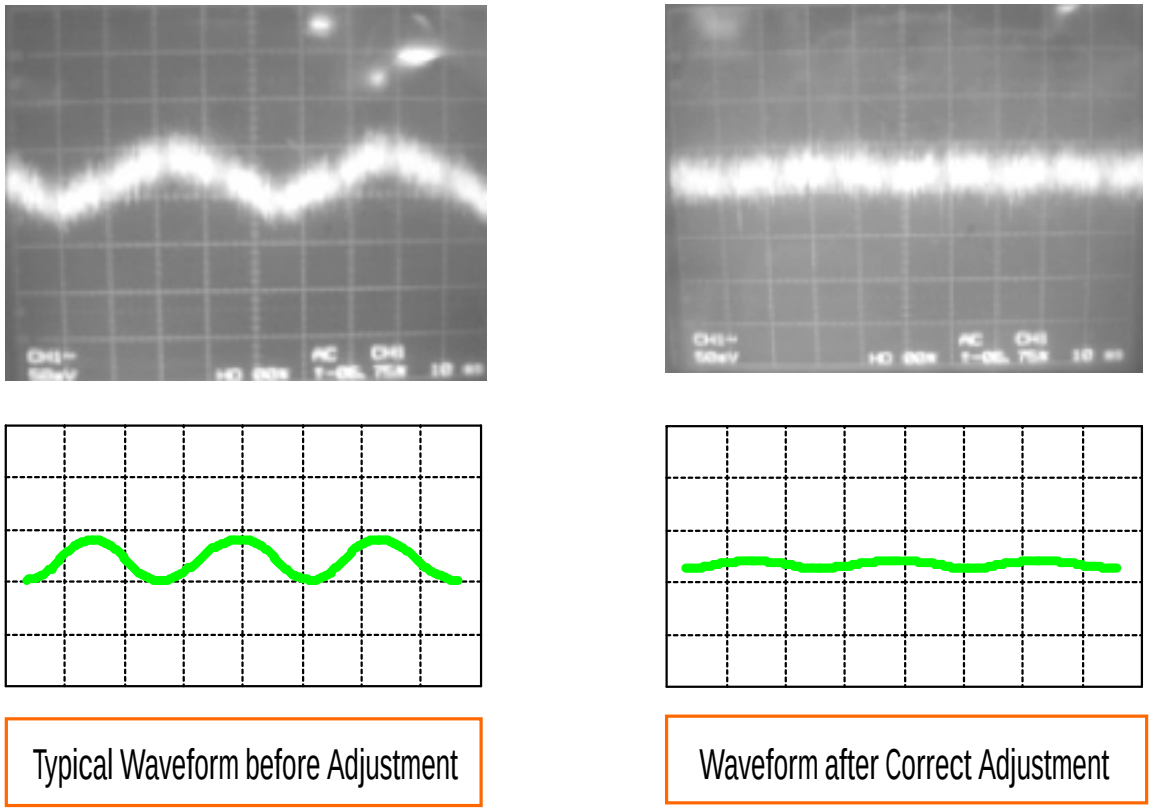


Fig. 3-7 Envelope Waveform

3-3 VCR Mechanical Adjustment

3-3-1 Tape Transport System and Adjustment Locations

The tape transport system has been adjusted precisely in the factory. Alignment is not necessary except for the following :
1) Noise observed on the screen.
2) Tape damage.
3) Parts replacement in the tape transport system.

Lower flange height of tape guide is used as the reference for the transport adjustment.
To maintain the height of the tape guide and prevent damage, do not apply excessive force onto the main base.

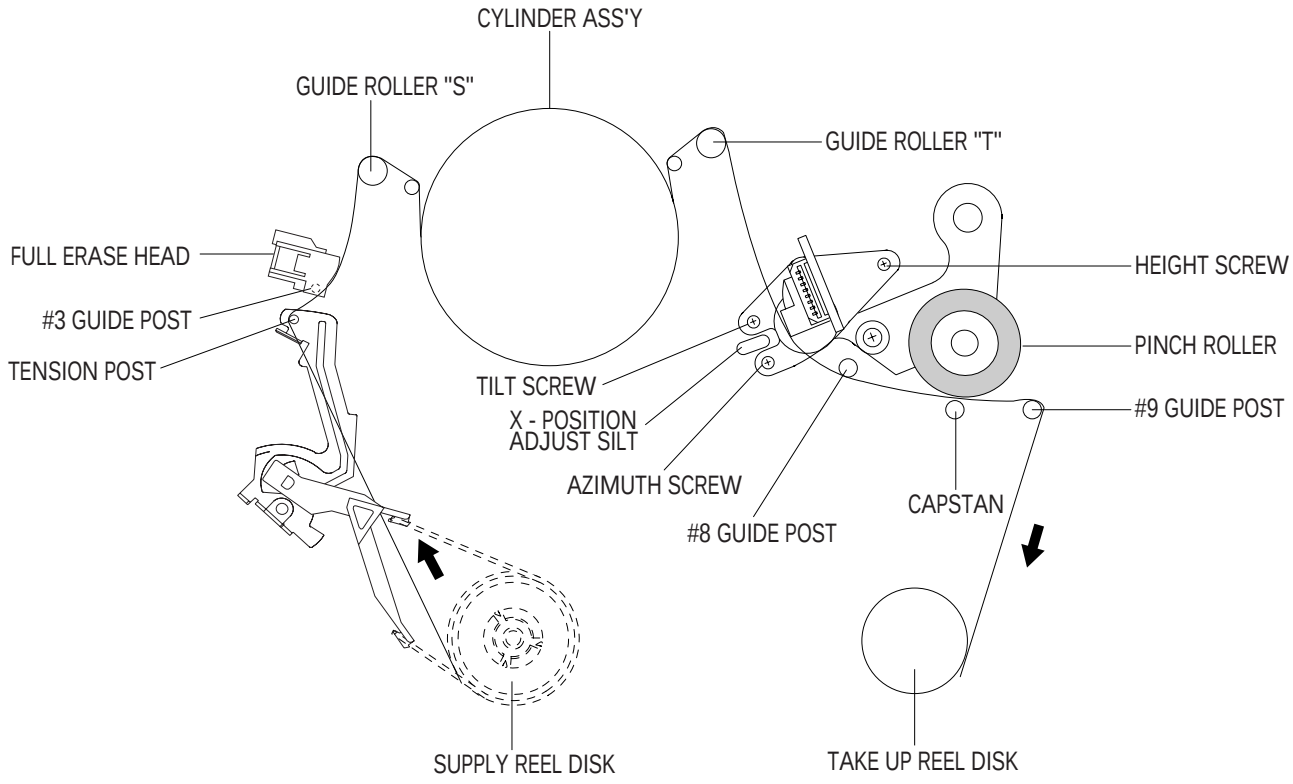


Fig. 3-8 Location of Tape Transport Adjustment

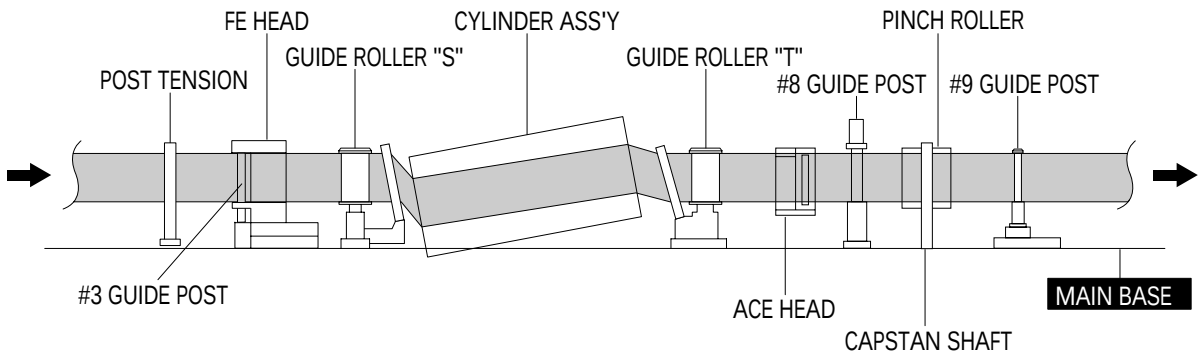


Fig. 3-9 Tape Travel Diagram

3-3-2 Tape Transport System Adjustment

When parts are replaced, perform the required adjustments by referring to procedures for the tape transport system. If there are any changes to the tape path, first run a T-120 tape and make sure excessive tape wrinkle does not occur at the tape guides.

◆ If tape wrinkle is observed at the guide roller S, T, turn the guide roller S, T until wrinkle disappears.
◆ If the tape wrinkle is still observed at the tape guide, perform the tilt adjustment of the ACE head.

(1) ACE Head Assembly Adjustment

a. ACE HEAD HEIGHT ADJUSTMENT

1) Run the alignment tape (Color bar) in the playback mode.
2) Observe surface of the audio head using a dental mirror.
3) Turn screw (C) clockwise or counterclockwise until the gap of lower tape edge and the lower edge of the control head is about 0.25mm. (Refer to Fig. 3-10 and 3-11)

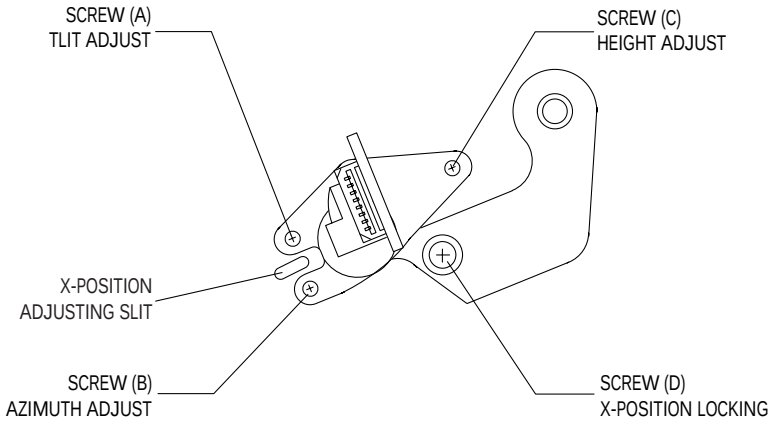


Fig. 3-10 Location of ACE Head Adjustment Screw

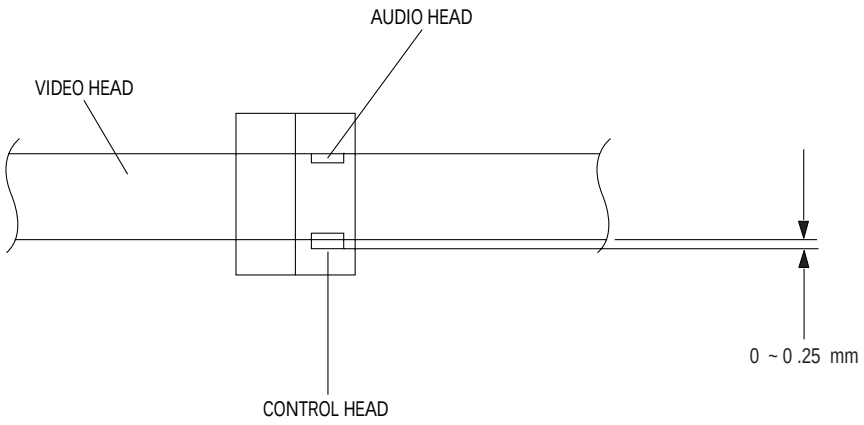


Fig. 3-11 ACE Head Height Adjustment

b. ACE HEAD TILT ADJUSTMENT

1) Playback a blank tape and observe the position of the tape at the lower flange of tape guide.
2) Confirm that there is no curl or wrinkle at the lower flange of tape guide as shown in Fig. 3-12 (B).
3) If a curl or wrinkle of the tape occurs, slightly turn the screw (A) tilt adjust on the ACE head ass'y.
4) Reconfirm the ACE head height.

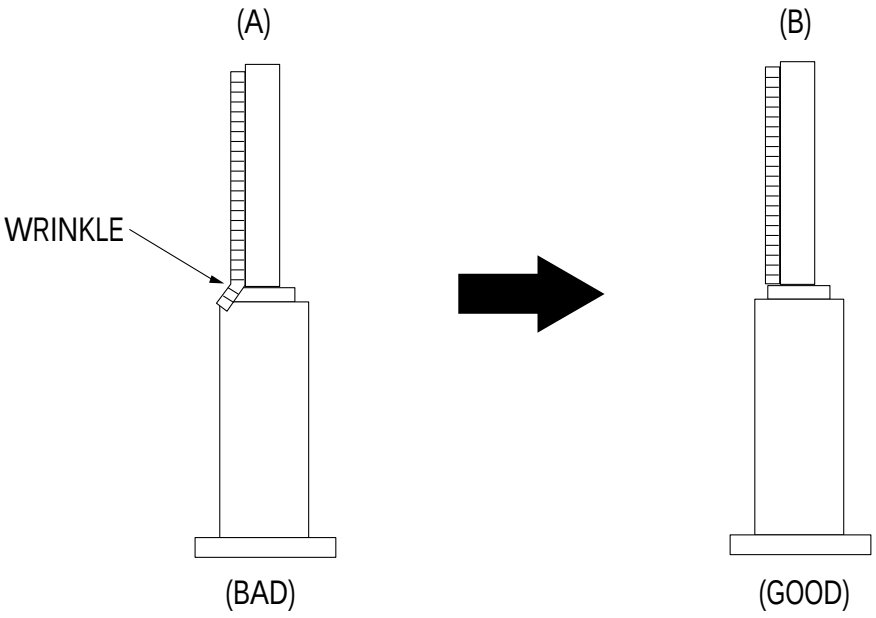


Fig. 3-12 Tape Guide Check

c. AUDIO AZIMUTH ADJUSTMENT

1) Load alignment tape (Mono scope) and playback the 7KHz signal.
2) Connect channel-1 scope probe to audio output.
3) Adjust screw (B) to achieve maximum audio level. (See Fig. 3-10)

d. ACE HEAD POSITION (X-POINT) ADJUSTMENT

1) Playback the alignment tape (Color bar)
2) Intermittently short-circuit the two Test Points on VCR Main PCB. (See Fig. 3-2)
3) Press the “0, 5” remote control buttons, then adjustment is operates automatically. (See Fig. 3-1)
4) Connect the CH-1 probe to “Envelope” the CH-2 probe to “H’D switching pulse” and then trigger to CH-1.
5) Insert the (-) driver into the X-Point adjustment hole and adjust it so that envelope waveform is maximum.

Test point :	TP2 (Audio Output)
	TP3 (Envelope)
	TP4 (H’D S/W -Trigger)
	TP5 (Control Pulse)

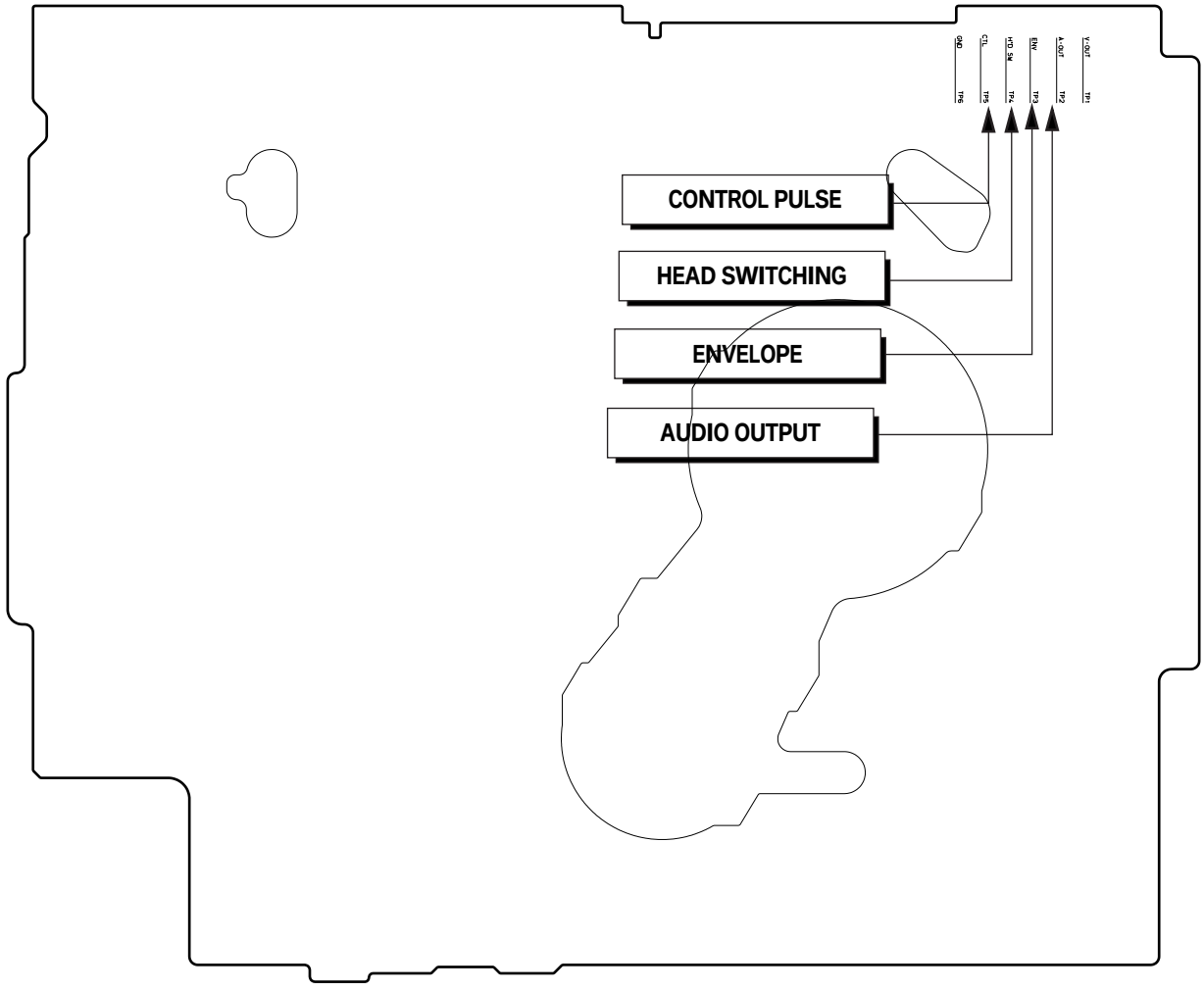


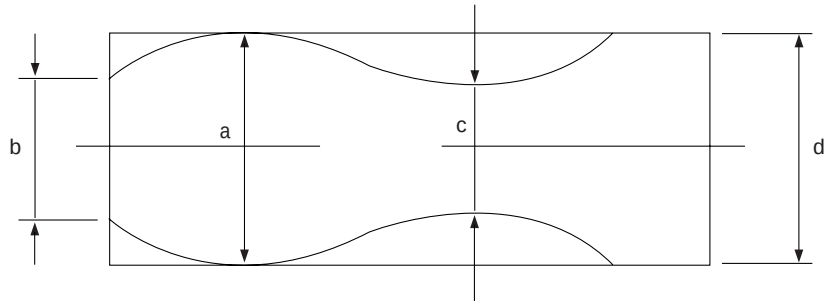
Fig. 3-13 Location of Test point (VCR Main PCB-Top View)

(2) Linearity adjustment (Guide roller S, T adjustment)

1) Playback the Mono Scope alignment tape (SP mode).
2) Observe the video envelope signal on an oscilloscope (triggered by the video switching pulse).
3) Make sure the video envelope waveform (at its minimum) meets the specification shown in Fig. 3-14.
   If it does not, adjust as follows :

Note :
a=Maximum output of the video RF envelope.
b=Minimum output of the video RF envelope at the entrance side.
c=Minimum output of the video RF envelope at the center point.
d=Maximum output of the video RF envelope at the exit side.

4) If the section A in Fig. 3-15 does not meet the specification, adjust the guide roller S up or down.
5) If the section B in Fig. 3-15 does not meet the specification, adjust the guide roller T up or down.



a b c d

c,b,d/a ≧ 63%

Fig. 3-14 Envelope Waveform Adjustment

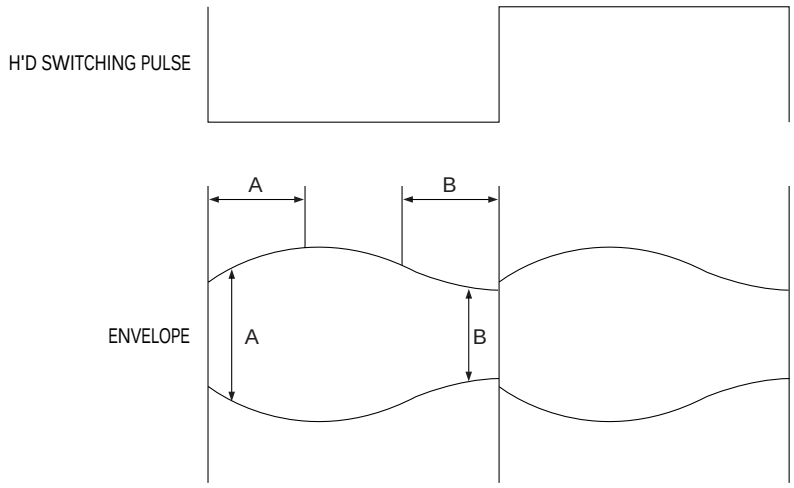


Fig. 3-15 Adjustment Points

6) Play back the Mono Scope alignment tape (SP mode).
7) Connect an oscilloscope CH-1 to the “Envelope” and CH-2 to the “H’D SW Pulse” for triggering.
8) Turn the guide roller heads with a flat head ( ) driver to obtain a flat video RF envelope as shown in Fig. 3-16.

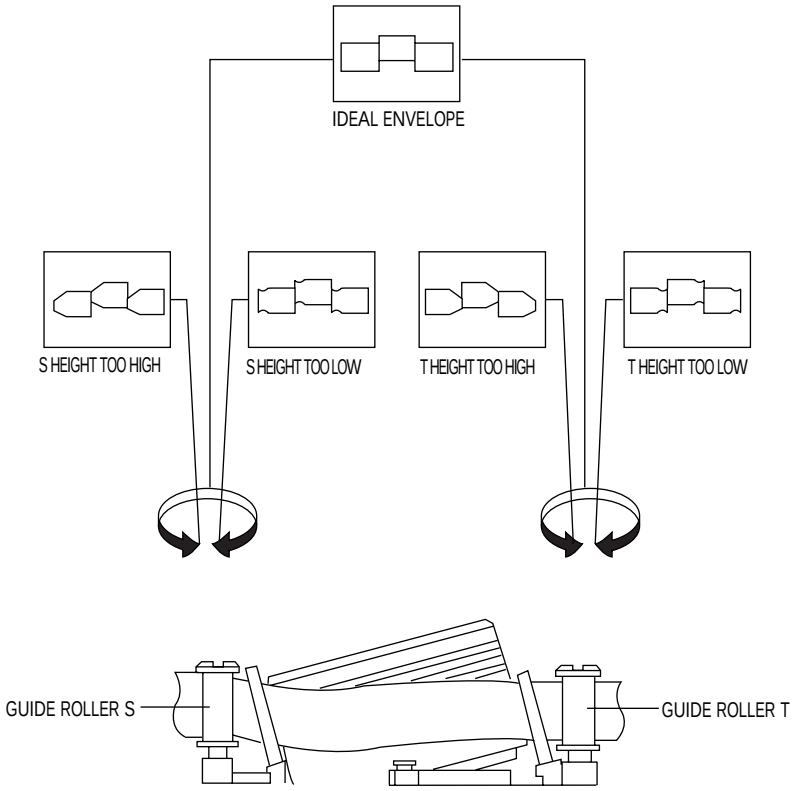


Fig. 3-16 Guide Roller S, T Height Adjustment

(3) Check Transitional Operation from RPS to Play

Check transition from RPS mode to play mode : Using a pre-recorded SP tape, make sure the entry side of envelope comes to an appropriate steady state within 3 seconds (as shown in Fig. 3-17).
If the envelope waveform does not reach specified peak-to peak amplitude within 3 seconds, adjust as follows :

1) Make sure there is no gap between the supply roller lower flange and the tape.
   If there is a gap, adjust the supply guide roller again.
2) Change operation mode from the RPS to the play mode (again) and make sure the entry side of envelope rises within 3 seconds.

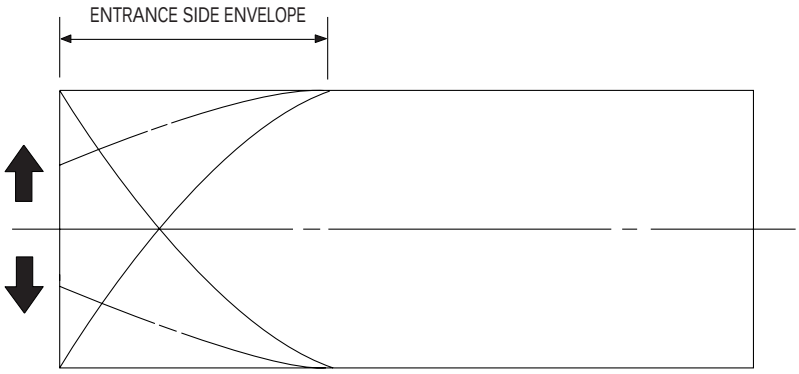


Fig.3-17 Video Envelope Rising when Operation mode Changes from RPS to Play Mode

(4) Envelope Check

1) Make recordings on T-120 (E-120) and T-160 (E-180) tape.
   Make sure the playback output envelope meets the specification as shown in Fig. 3-18.
2) Play back a self recorded tape (recording made on the unit using with T-120 (E-120).
   The video envelope should meet the specification as shown in Fig. 3-18.
   In SP mode, (A) should equal (B).
   If the head gap is wide, upper cylinder should be checked.

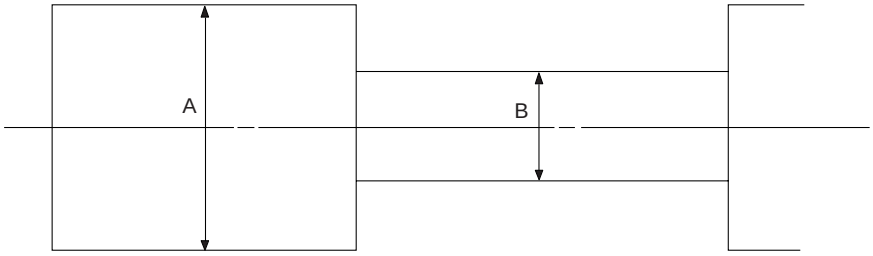


Fig. 3-18 Envelope Input and Output Level

(5) Tape Wrinkle Check

1) Run the T-160 (E-180) tape in the playback, FPS, RPS and Pause modes and observe tape wrinkle at each guide.
2) If excessive tape wrinkle is observed, perform the following adjustments in Playback mode :

- ◆ Tape wrinkle at the guide roller S, T section : Linearity adjustment.
- ◆ Tape wrinkle at tape guide flange : ACE head assembly coarse adjustment.

3-3-3 Reel Torque

1) The rotation of the capstan motor causes the holder clutch ass'y to rotate through the belt pulley.
2) The spring wrap PLAY/REV of holder clutch ass'y drives the disk reel S, T through gear idler by rotation of gear center ass'y.
3) Brake is operated by slider cam at FF/REW mode.
4) Transportation of accurate driving force is done by gears. (Gear Center Ass'y)

Note : If the spec. does not meet the followings specifications, replace the holder clutch ass'y and then recheck.

<Table 3-3>

MODE	TORQUE g/cm	GAUGE
PB	42 ± 11	Cassette Torquemeter
RPS	145 ± 30	Cassette Torquemeter

11. Schematic Diagrams

11-1 S.M.P.S. ---------- 11-2

11-2 Power Drive ---------- 11-3

11-3 Syscon/Servo ---------- 11-4

11-4 Logic ---------- 11-5

11-5 A/V ---------- 11-6

11-6 Hi-Fi ---------- 11-7

11-7 A2/NICAM ---------- 11-8

11-8 SECAM (Option) ---------- 11-9

11-9 OSD/VPS/PDC ---------- 11-10

11-10 TM ---------- 11-11

11-11 I/O ---------- 11-12

11-12 DVD A/V Codec & Memory Interface ---------- 11-13

11-13 DVD RF & Servo ---------- 11-14

11-14 DVD Video Output ---------- 11-15

11-15 B/B Connector & Power Connection ---------- 11-16

Note

For schematic Diagram
- Resistors are in ohms, 1/8W unless otherwise noted.

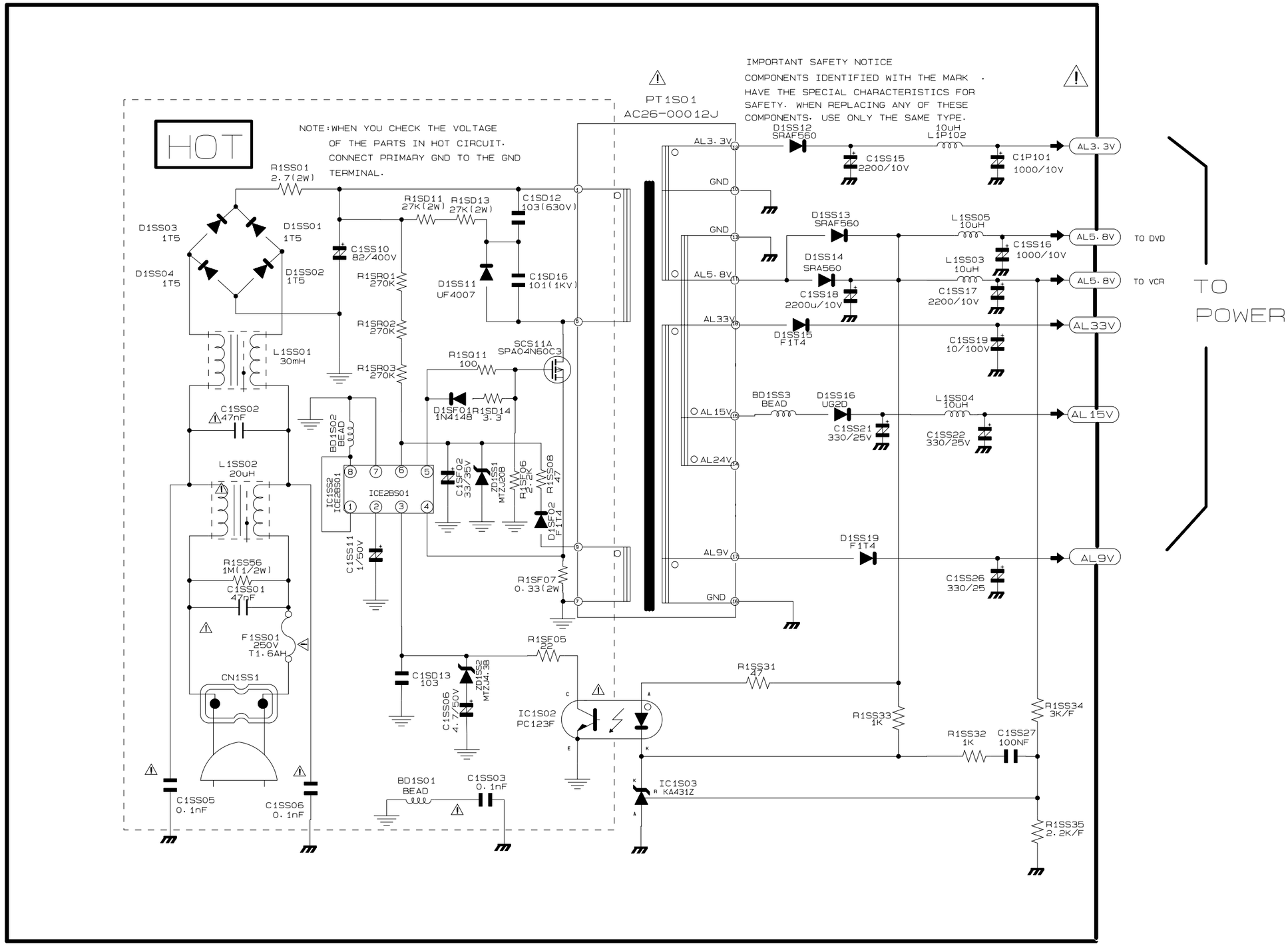
Special note :
Most semiconductor devices are electrostatically sensitive and therefore require the special handling techniques described under the "electrostatically sensitive (ES) devices" section of this service manual.

Note :
Do not use the part number shown on this drawing for ordering. The correct part number is shown in the parts list (may be slightly different or amended since this drawing was prepared).

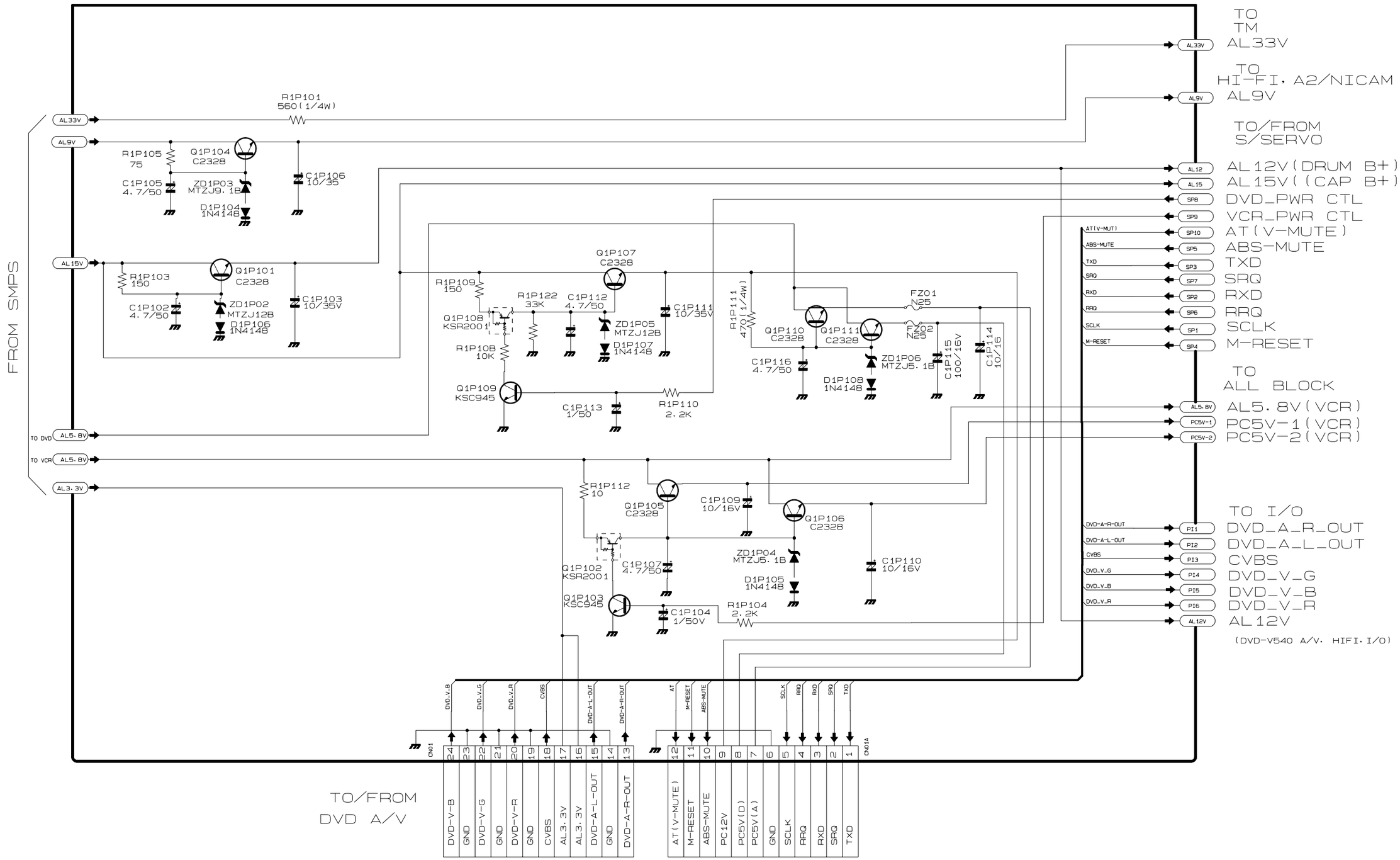
Important safety notices :
Components identified with the mark ⚠ have the special characteristics for safety. When replacing any of these components.
Use only the same type.

This Document can not be used without Samsung's authorization.

11-1 S.M.P.S.


HOT
NOTE:WHEN YOU CHECK THE VOLTAGE OF THE PARTS IN HOT CIRCUIT. CONNECT PRIMARY GND TO THE GND TERMINAL.
PT1S01
AC26-00012J
IMPORTANT SAFETY NOTICE
COMPONENTS IDENTIFIED WITH THE MARK . HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS. USE ONLY THE SAME TYPE.
R1SS01 2.7(2W)
D1SS03 1T5
D1SS01 1T5
D1SS04 1T5
D1SS02 1T5
R1SD11 27K(2W)
R1SD13 27K(2W)
C1SD12 103(630V)
C1SS10 82/400V
R1SR01 270K
D1SS11 UF4007
C1SD16 101(1KV)
R1SR02 270K
R1SR03 270K
L1SS01 30mH
SCS11A SPA04N60C3
R1SQ11 100
D1SF01 1N4148
R1SD14 3.3
C1SS02 47nF
BD1SQ2 BEAD
L1SS02 20uH
IC1SS2 ICE2BS01
ICE2BS01
C1SS02 33/35V
ZD1SS1 MTZJ20B
R1SF06 2.2K
R1SS08 47
D1SF02 F1T4
C1SS11 1/50V
R1SS56 1M(1/2W)
C1SS01 47nF
F1SS01 250V T1.6AH
CN1SS1
C1SS05 0.1nF
C1SS06 0.1nF
R1SF07 0.33(2W)
R1SF05 22
C1SD13 103
ZD1SS2 MTZJ4.3B
C1SS06 4.7/50V
IC1S02 PC123F
BD1S01 BEAD
C1SS03 0.1nF
AL3.3V
GND
GND
AL5.8V
AL33V
AL15V
AL24V
AL9V
GND
D1SS12 SRAF560
C1SS15 2200/10V
10uH L1P102
C1P101 1000/10V
D1SS13 SRAF560
L1SS05 10uH
C1SS16 1000/10V
D1SS14 SRA560
L1SS03 10uH
C1SS18 2200u/10V
C1SS17 2200/10V
D1SS15 F1T4
C1SS19 10/100V
BD1SS3 BEAD
D1SS16 UG2D
C1SS21 330/25V
L1SS04 10uH
C1SS22 330/25V
D1SS19 F1T4
C1SS26 330/25
R1SS31 47
R1SS33 1K
R1SS32 1K
C1SS27 100NF
R1SS34 3K/F
IC1S03 KA431Z
R1SS35 2.2K/F
AL3.3V
AL5.8V
AL5.8V
AL33V
AL15V
AL9V
TO DVD
TO VCR
TO POWER

11-2 Power Drive



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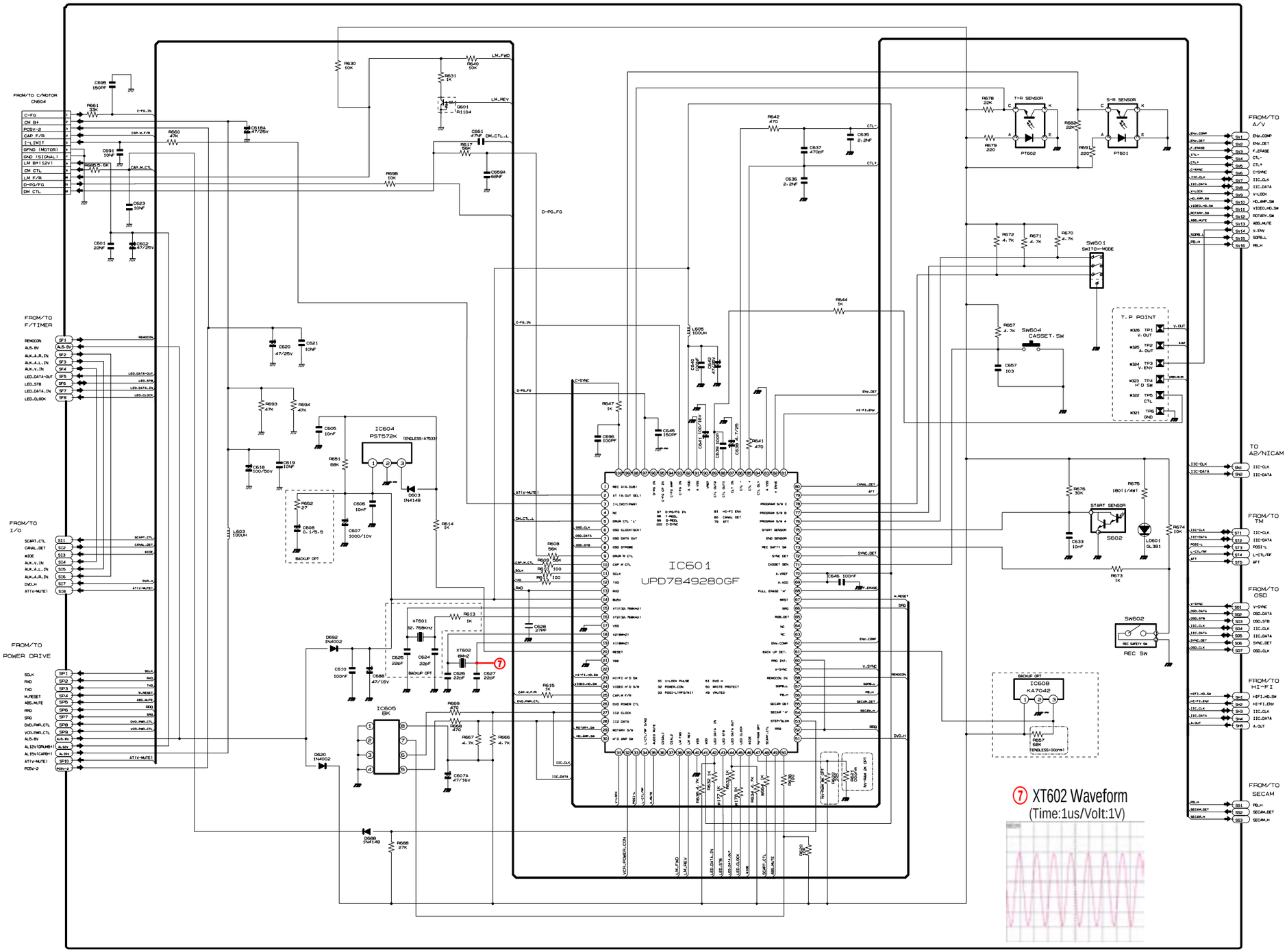
11-3 Syscon/Servo



※*These are the waveforms of DVD-V5500/ DVD-V6500.*
Caution) There can be some differences (Voltage, Frequency, etc.) among cameras.

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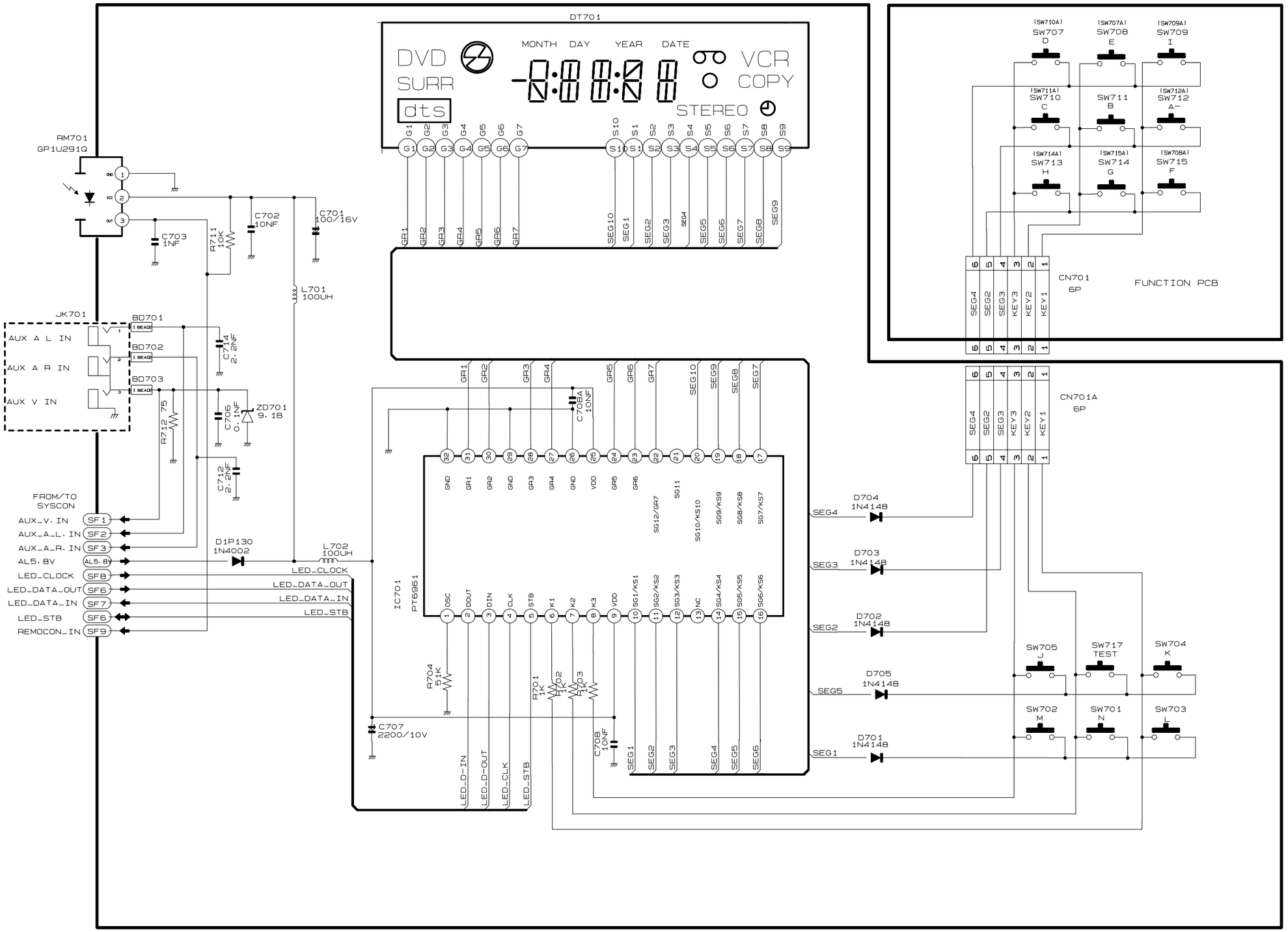
11-4 Logic



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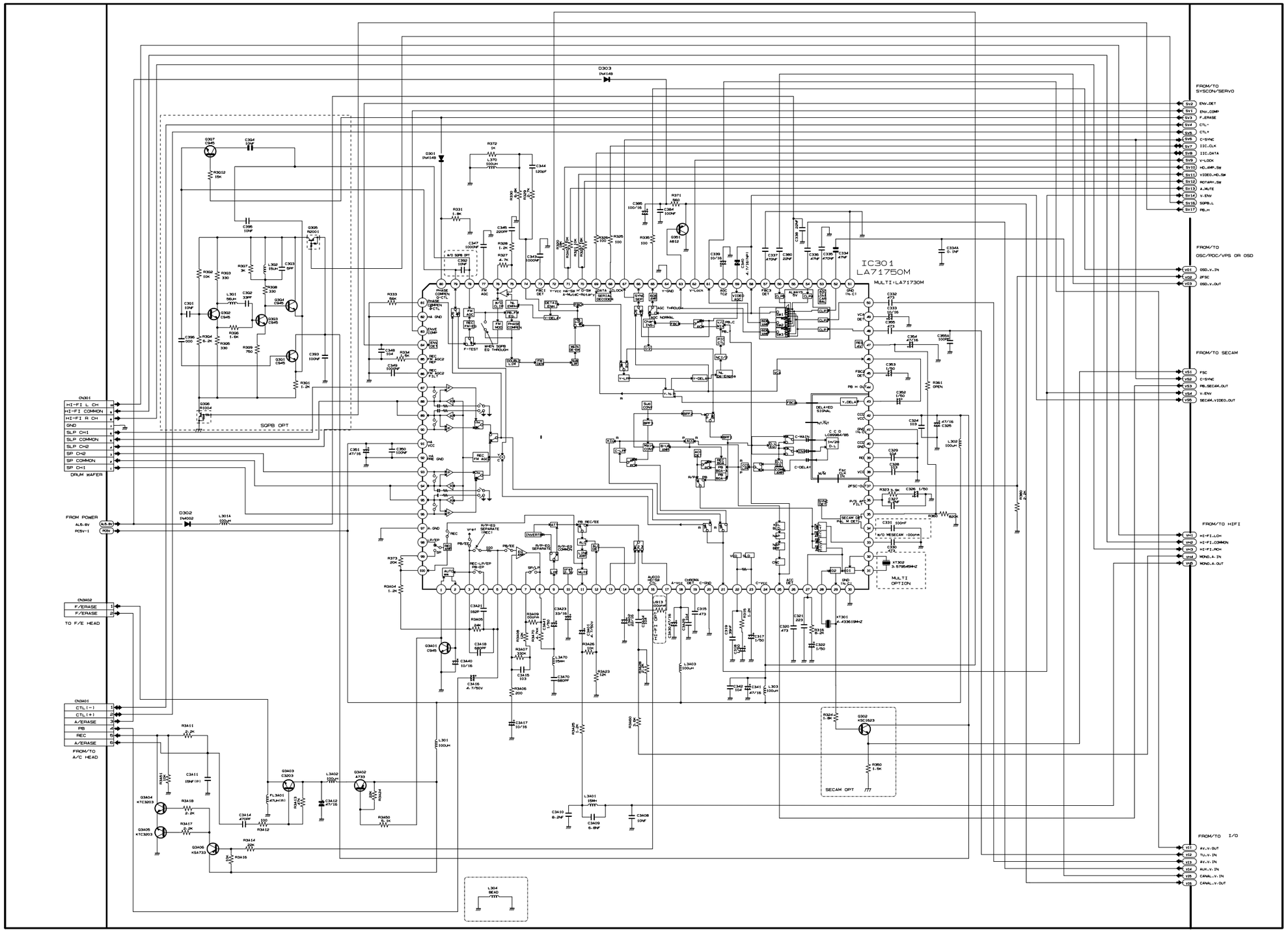
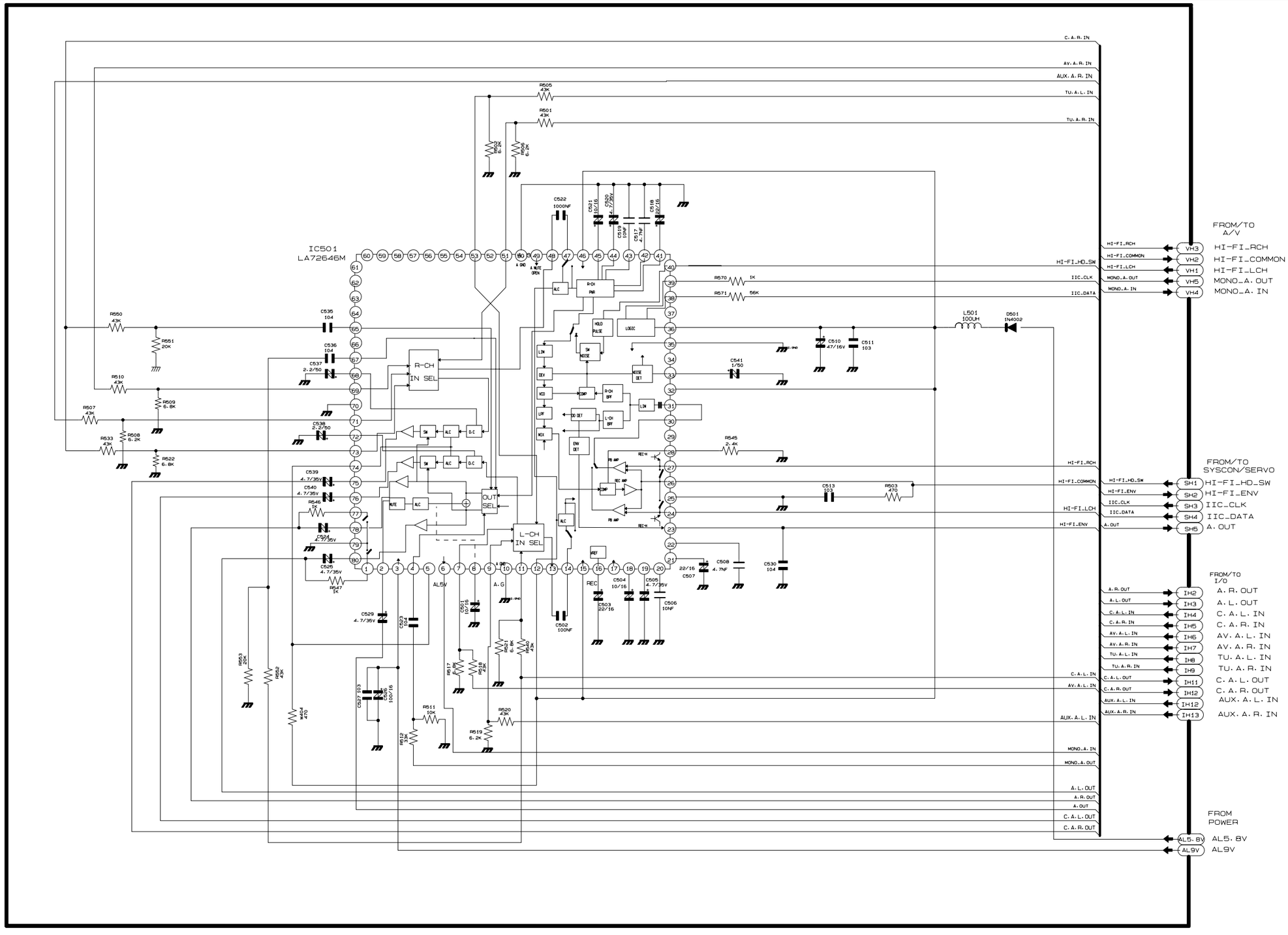
11-5 A/V


IC301
LA71750M
MULTI:LA71730M
FROM/TO SYSCON/SERVO
FROM/TO OSC/PDC/VPS OR OSD
FROM/TO SECAM
FROM/TO HIFI
FROM/TO I/O
CN301
DRUM WAFER
CN3402
TO F/E HEAD
CN3401
FROM/TO A/C HEAD
FROM POWER
SQPB OPT
SECAM OPT
MULTI OPTION

11-6 Hi-Fi



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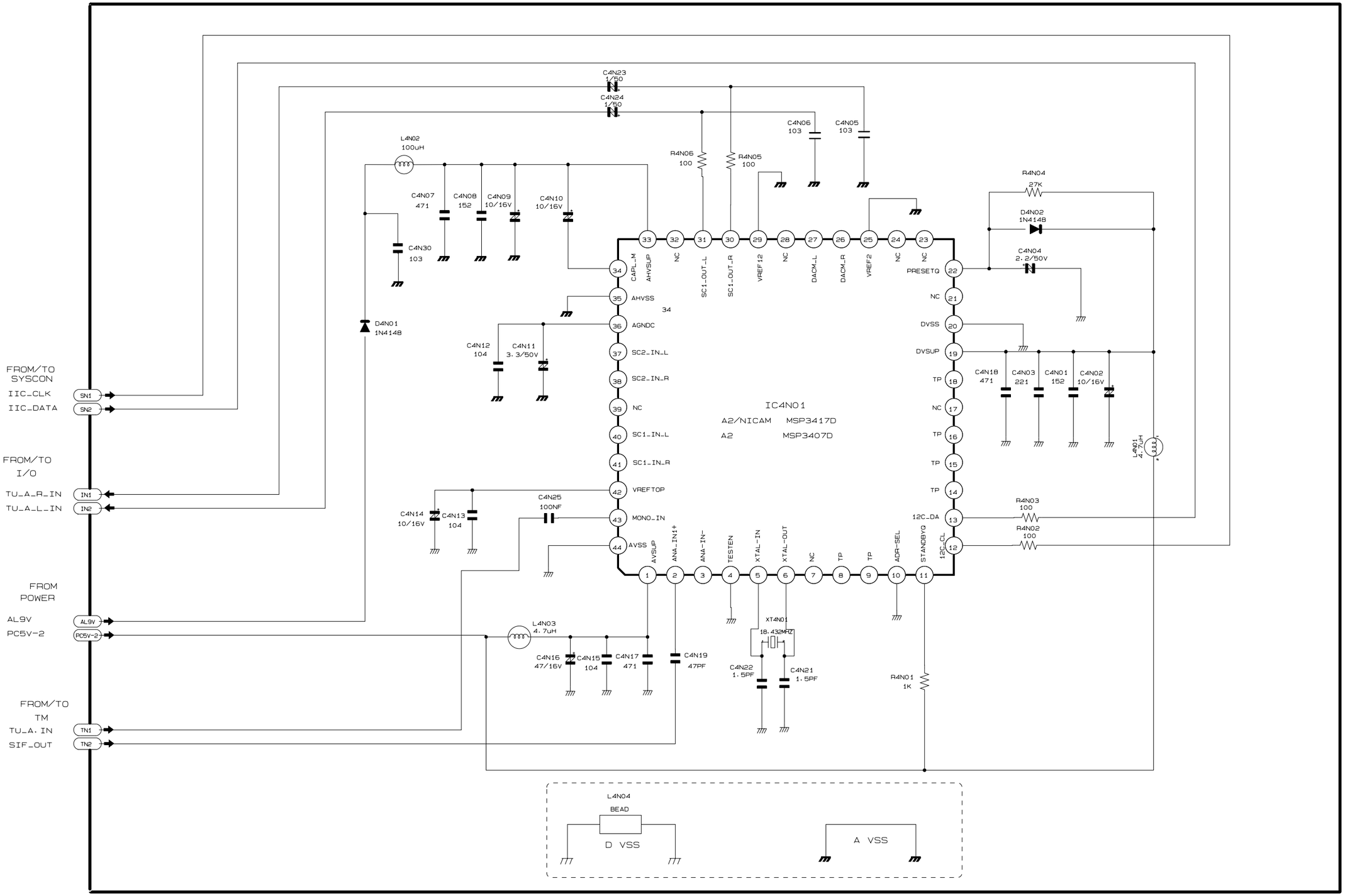
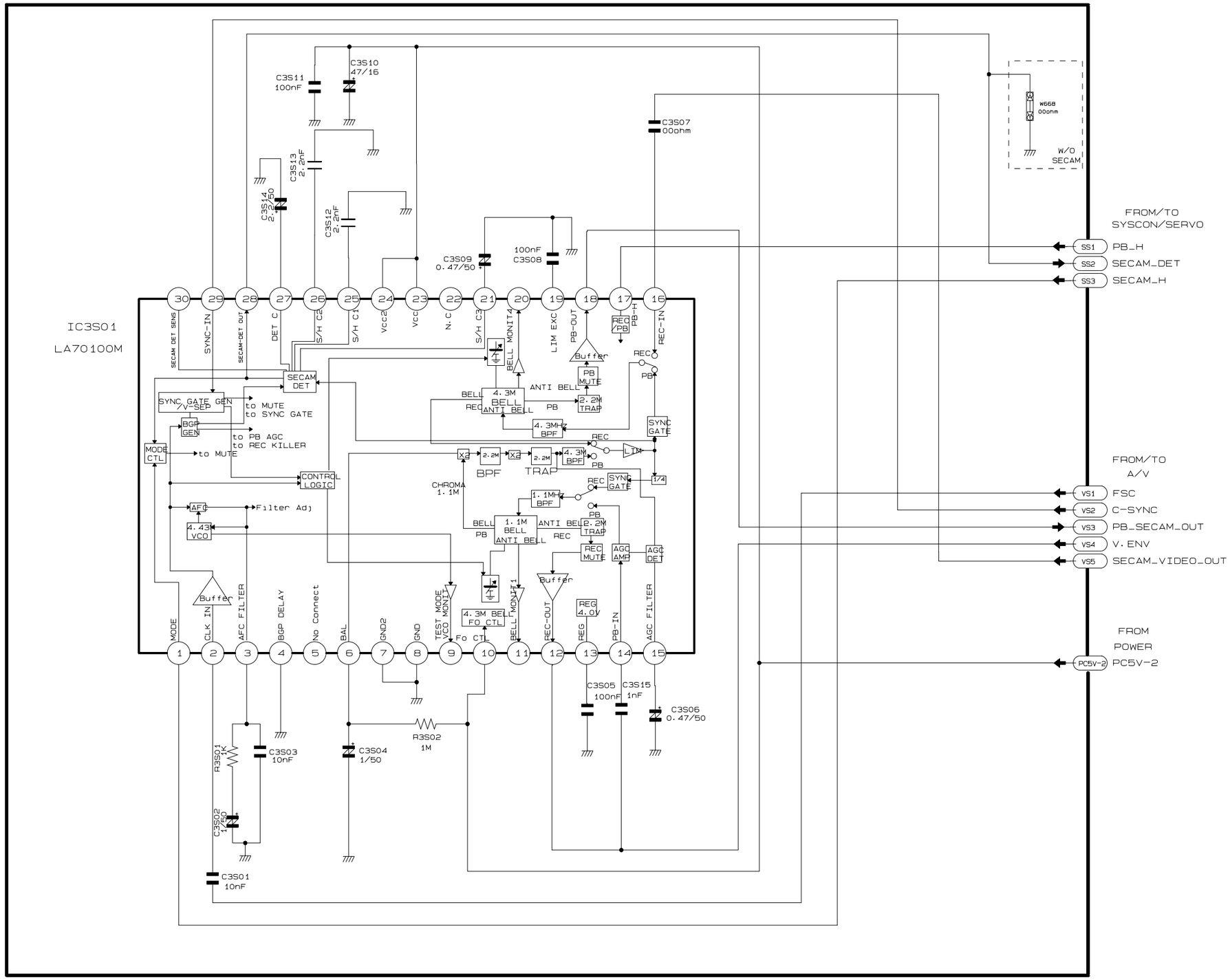
11-7 A2/NICAM


C4N23 1/50
C4N24 1/50
L4N02 100uH
R4N06 100
R4N05 100
C4N06 103
C4N05 103
R4N04 27K
D4N02 1N4148
C4N04 2.2/50V
C4N07 471
C4N08 152
C4N09 10/16V
C4N10 10/16V
C4N30 103
D4N01 1N4148
C4N12 104
C4N11 3.3/50V
C4N18 471
C4N03 221
C4N01 152
C4N02 10/16V
L4N01 4.7uH
IC4N01
A2/NICAM MSP3417D
A2 MSP3407D
33 CAPL_M
32 AHVSUP
31 NC
30 SC1_OUT_L
29 SC1_OUT_R
28 VREF12
27 NC
26 DACM_L
25 DACM_R
24 VREF2
23 NC
22 NC
34 PRESETQ
35 AHVSS
36 AGNDC
37 SC2_IN_L
38 SC2_IN_R
39 NC
40 SC1_IN_L
41 SC1_IN_R
42 VREFTOP
43 MONO_IN
44 AVSS
21 NC
20 DVSS
19 DVSUP
18 TP
17 NC
16 TP
15 TP
14 TP
13 12C_DA
12 12C_CL
1 AVSUP
2 ANA_IN1+
3 ANA_IN-
4 TESTEN
5 XTAL_IN
6 XTAL_OUT
7 NC
8 TP
9 TP
10 ADR_SEL
11 STANDBYQ
C4N14 10/16V
C4N13 104
C4N25 100NF
R4N03 100
R4N02 100
FROM/TO SYSCON
IIC_CLK
IIC_DATA
SN1
SN2
FROM/TO I/O
TU_A_R_IN
TU_A_L_IN
IN1
IN2
FROM POWER
AL9V
PC5V-2
L4N03 4.7uH
C4N16 47/16V
C4N15 104
C4N17 471
C4N19 47PF
XT4N01 18.432MHZ
C4N22 1.5PF
C4N21 1.5PF
R4N01 1K
FROM/TO TM
TU_A.IN
SIF_OUT
TN1
TN2
L4N04 BEAD
D VSS
A VSS

11-8 SECAM (Option)



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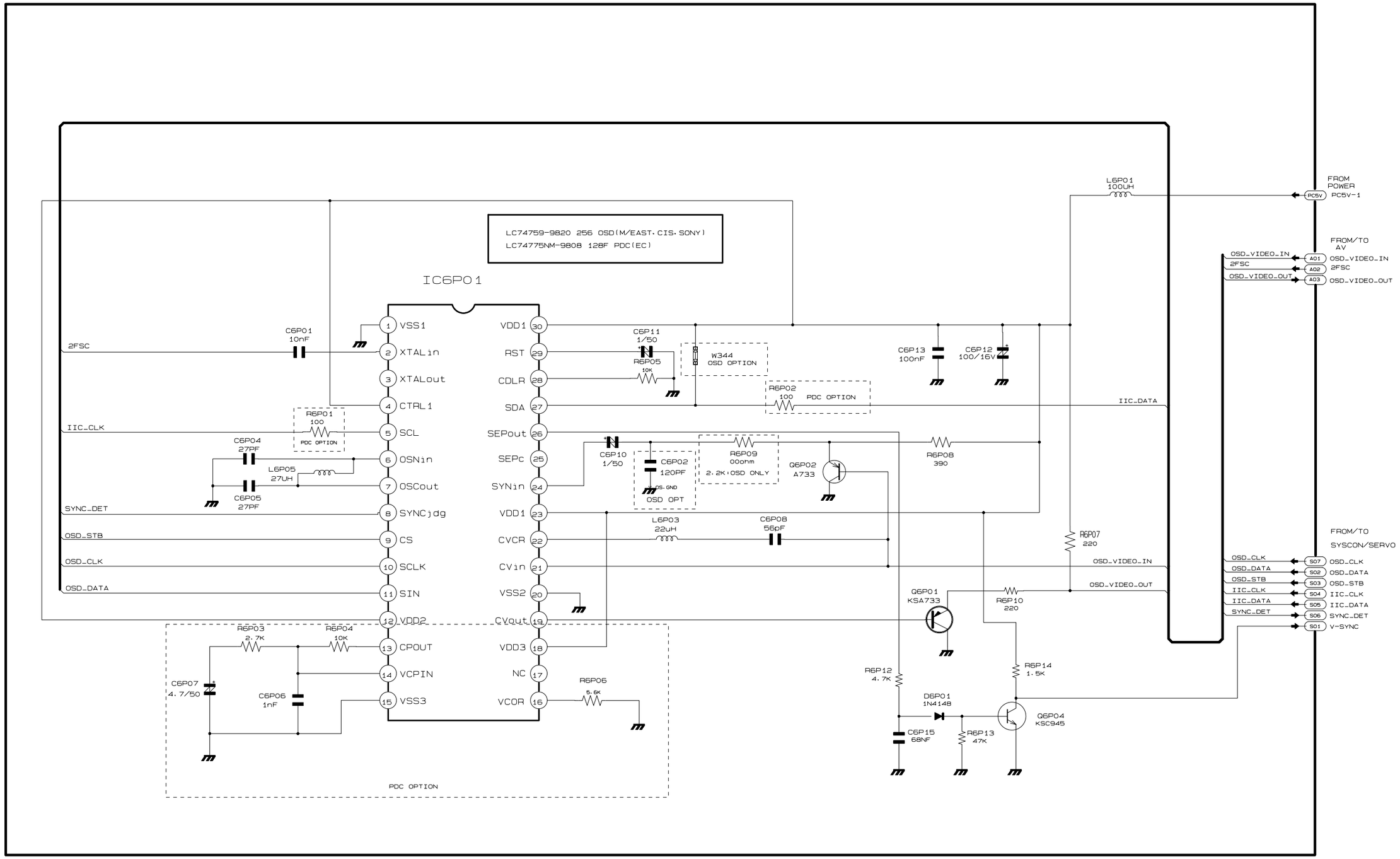
11-9 OSD/VPS/PDC



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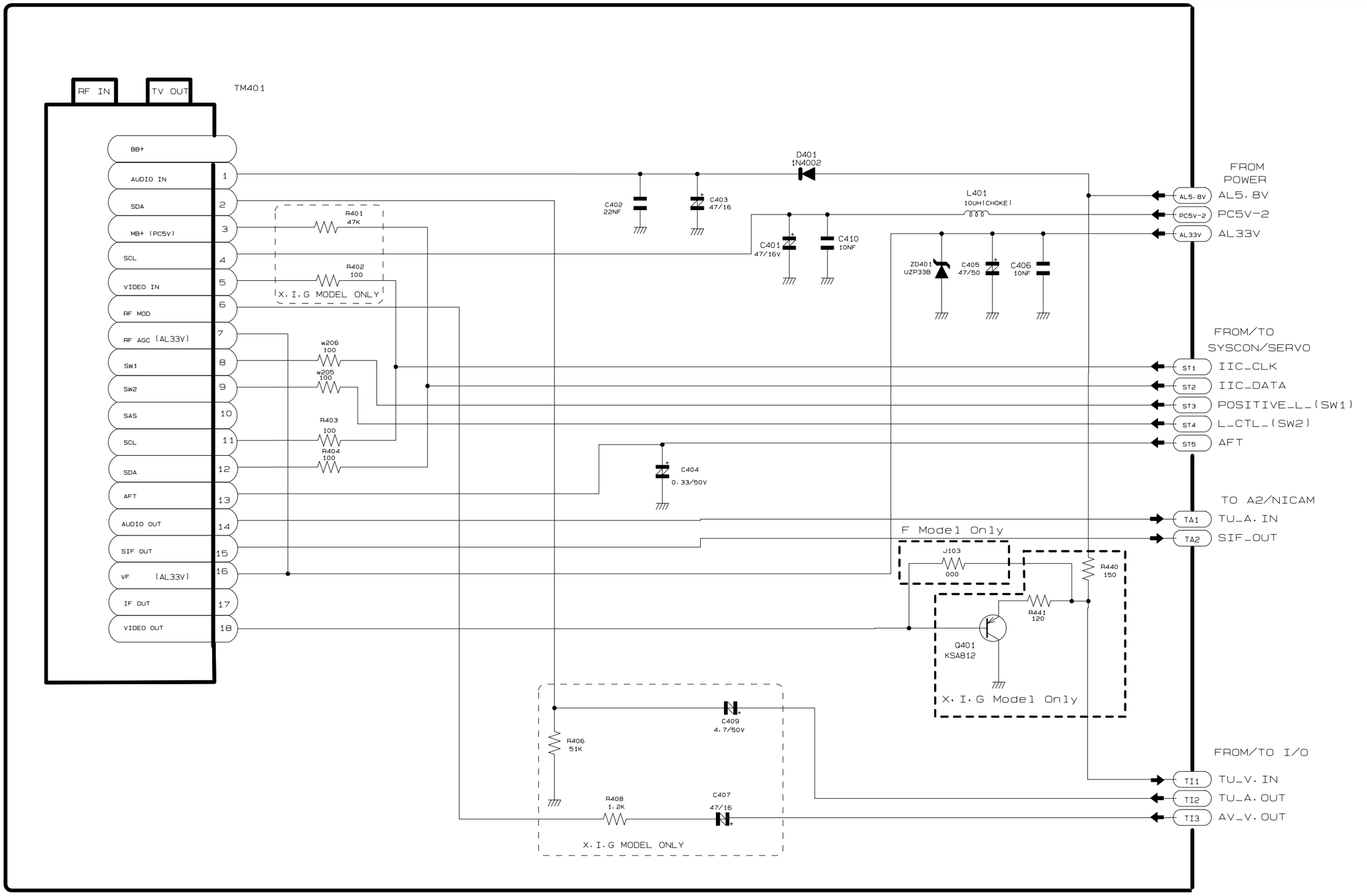
11-10 TM



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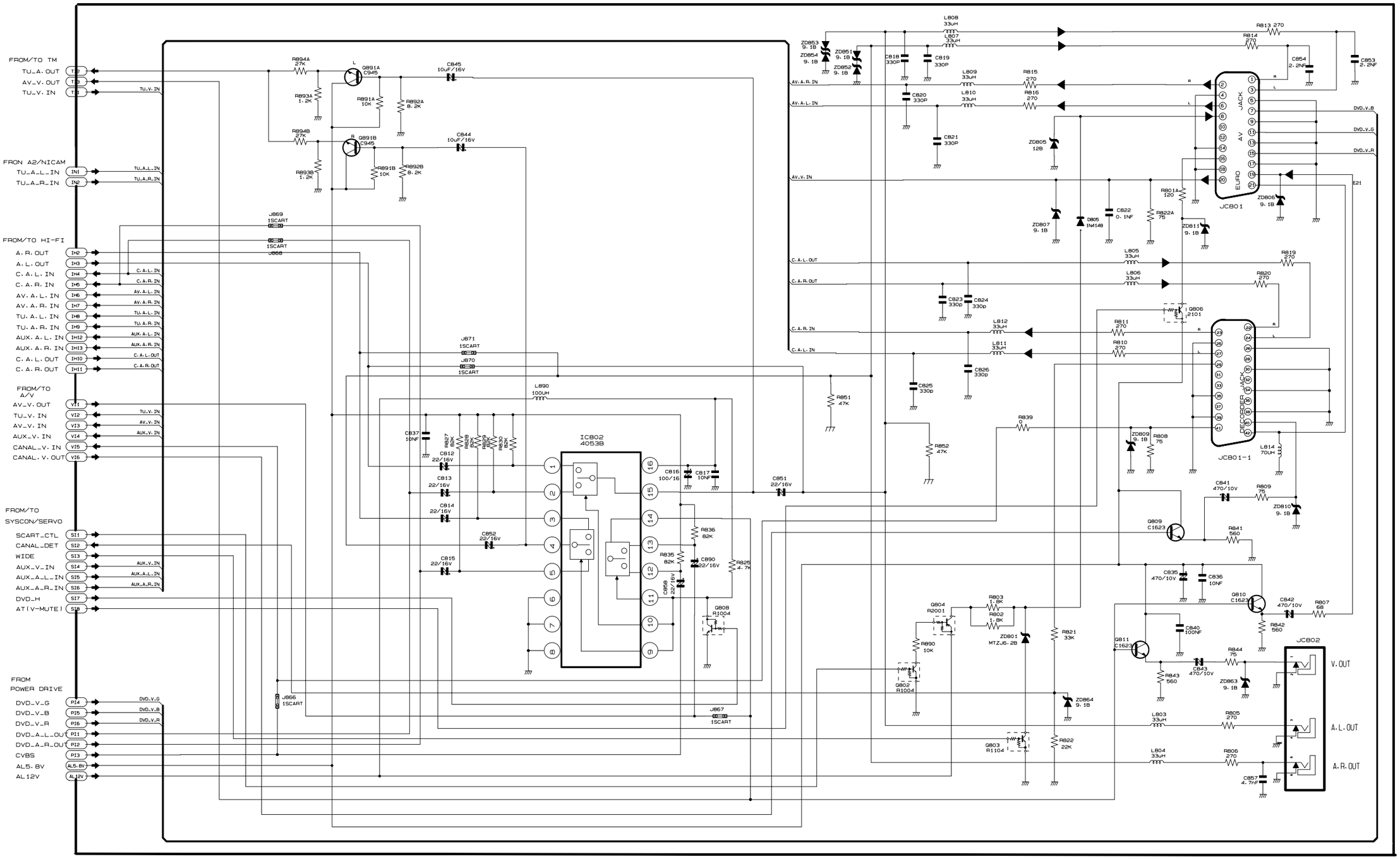
11-11 I/O



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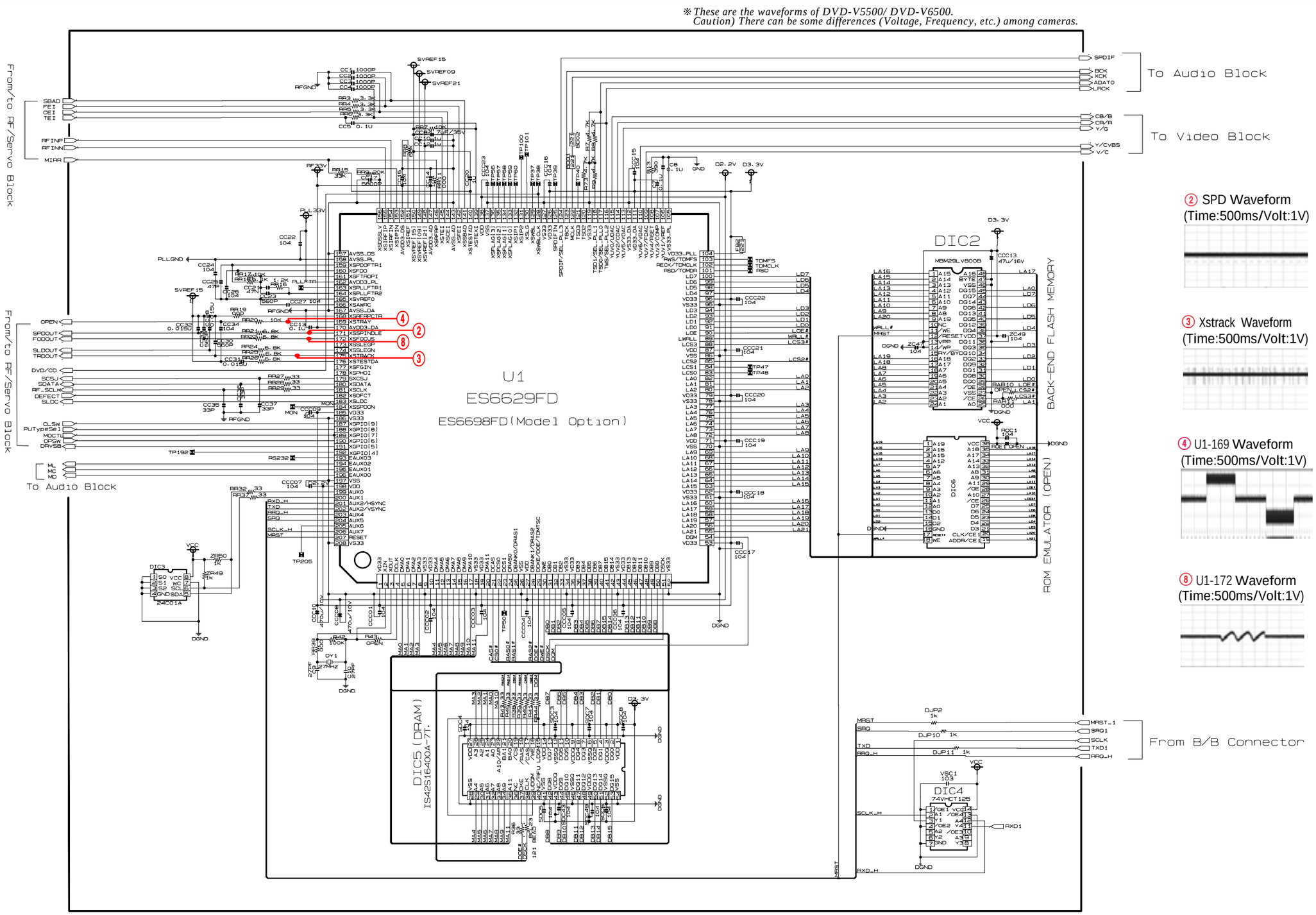
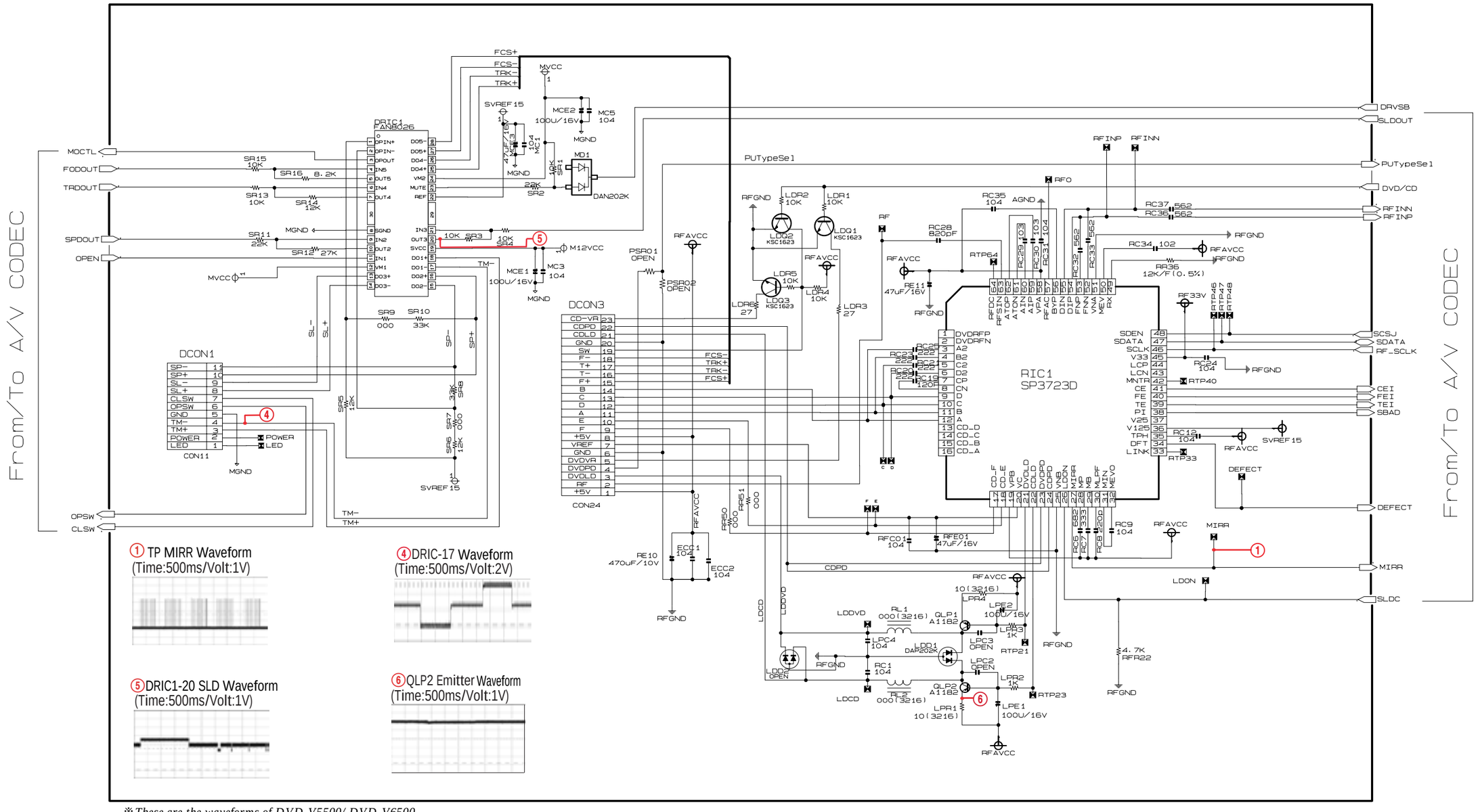
11-12 DVD A/V Codec and Memory Interface

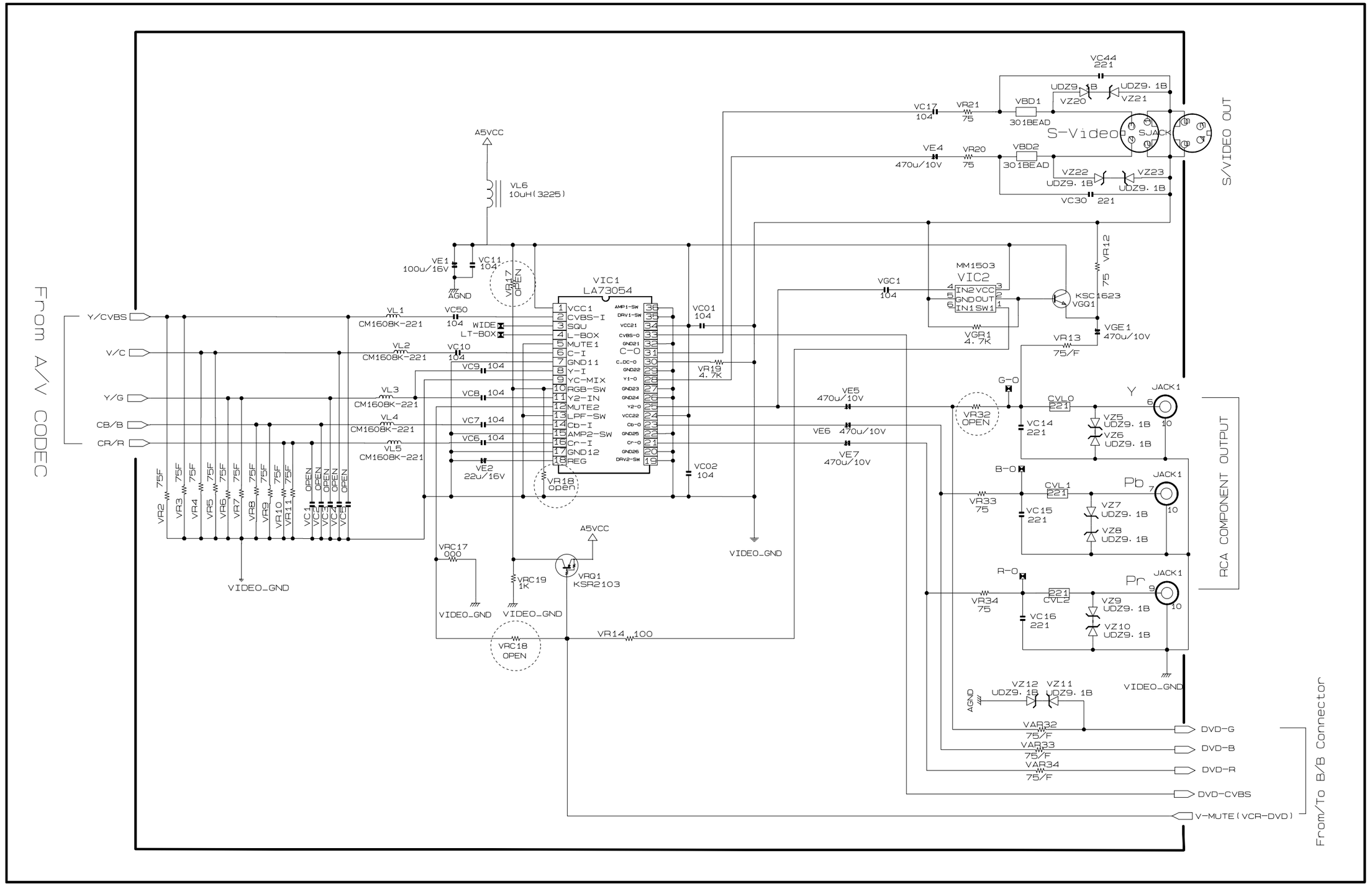


11-13 DVD RF and Servo

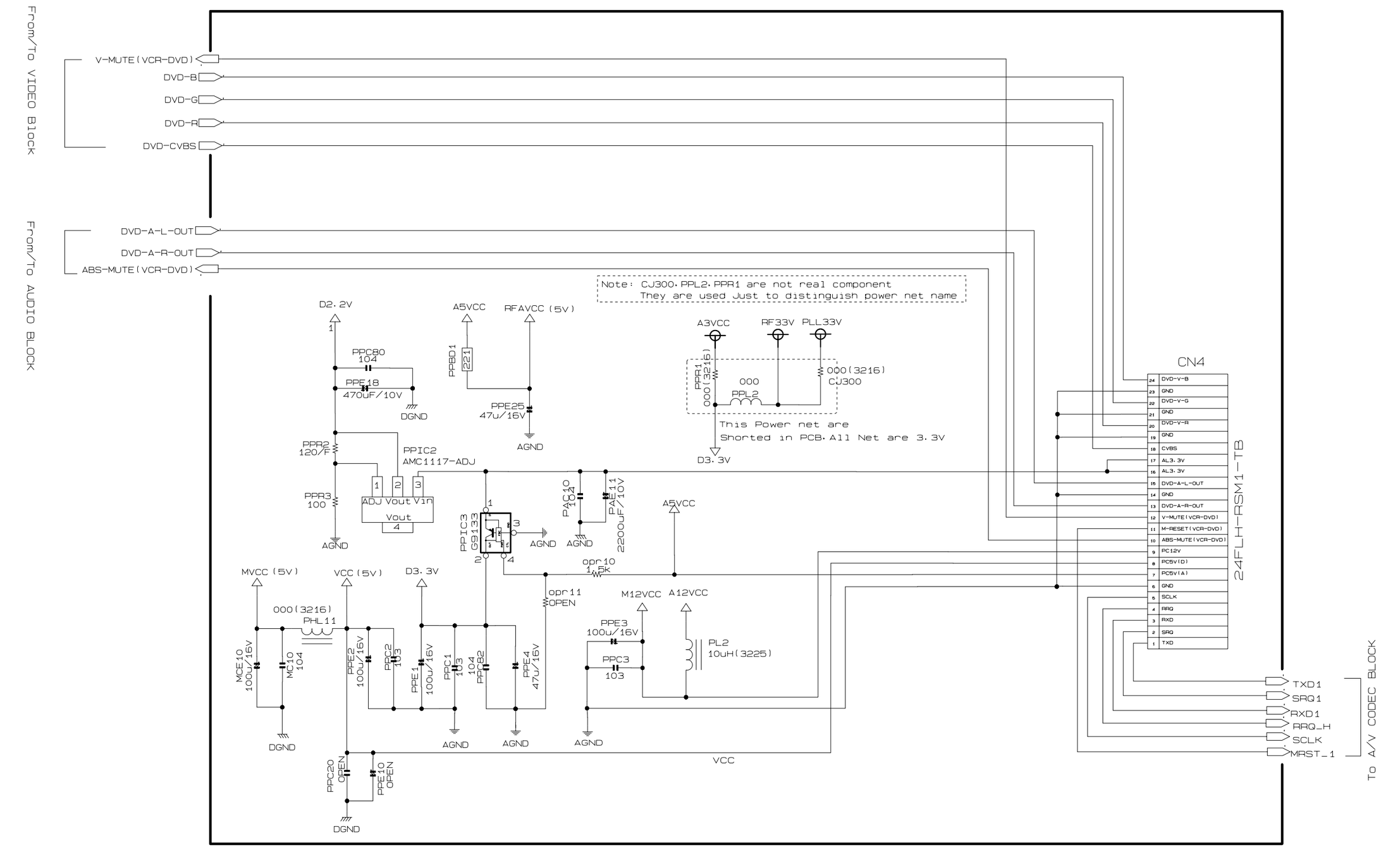


※ *These are the waveforms of DVD-V5500/ DVD-V6500.*
Caution) There can be some differences (Voltage, Frequency, etc.) among cameras.

11-14 DVD Video Output



11-15 B/B Connector and Power Connection



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MEMO